SERVICE MANUAL

HIGH - RESOLUTION DISPLAY MONITOR
MODEL HL6945 SERIES
HL6955
HL7955

MITSUBISHI ELECTRIC CORPORATION
OCT. 1991

X－RADIATION WARNING

The surface of picture tube may generate X-Radiation. Precaution during servicing, and if possible use of a lead apron or metal for shielding is recommended. To avoid possible exposure to X-Radiation and electrical shock hazard, the high voltage compartment and the picture tube shield must be kept in place whenever the chassis is in operation. When replacing picture tube use only designated replacement part since it is a critical component with regard to X-Radiation as noted above. The high-voltage specification is described on adjustment procedure.

CRITICAL COMPONENT REPLACEMENT WARNING

The components marked "⚠" are critical components for X-Radiation. When replacing these parts, use exactly the same one. If broken the critical component, please contact with qualified personnel of Mitsubishi Electric Corp. or the company which indicated on name plate.

注 意

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CAUTION

These products or technologies are subject to Japanese and / or COCOM strategic restrictions, and diversion contrary thereto is prohibited.

US MODEL : HL6945ATK/ETK (Option)
EUR. MODEL : HL6945ETKL

SPECIFICATION
OF
19"V AUTO-TRACKING COLOR DISPLAY MONITOR

MAR.4,1991

NO.	TYPE			MITSUBISHI STANDARD	REMARKS
1	CRT	Size		19"V	
		Dot Pitch (mm)		0.31 Dot	
		Phosphor Type		P22	
		Face-plate	·Light DM-coating (std. for US) ·Light DM-coating + Anti-static (std. for Eur.)		(Option for US) Anti-static coating (E coating)
		Light Transmission		Tinted (51%)	
		Focusing method		Dynamic-Focus(horizontally)	
2	SCANNING	Horizontal Freq. (KHz)		30~64KHz	
		Vertical Freq. (Hz)		50~130Hz	
3	SIGNAL INPUT	Video R. G. B.		Analog	
		Sync.		Sync. on Green video / Composite-Posi. & Nega. / Separated-Posi. & Nega.	
		Termination (Impedance) (Ω)	Video	75Ω / HIGH IMPEDANCE	
			Sync.	2.2KΩ / HIGH IMPEDANCE	1.5~5Vp-p
4	VIDEO AMP	Dot Clock Rate		110MHz	
5	SCREEN CHARACTE-RISTICS	Display Resolution		1280 dots×1024 lines	
		Display size (mm)	Horizontal	345/350mm (Typ.)	
			Vertical	275/265mm (Typ.)	
		Misconvergence	Center	0.35mm (Typ.)	
			Other	0.5mm (Typ.)	
		Brightness		100nit	(Tinted)
6	CONTROLS	User Controls	Front	Power SW, Degauss SW, Contrast, Brightness, H-position, H-width, V-position, V-height, Mode select SW, Pre-set-Recall SW	
7	CONNECTOR & CABLE	Power Input	Connector	3P IEC PLUG	
		Signal Input	Connector	BNC	
8	POWER SUPPLY	Operating range		AC100~120V / 220~240V 50 / 60Hz, Automatically	
9	CABINET	Plastic with Tilt / Swivel stand		Mitsubishi standard	
10	REGULATORY	Safety	US model	UL/CSA	
			Eur. model	TÜV	
		EMI	US model	FCC-A	
			Eur. model	VDE-B	
		X-Ray	US model	DHHS	
			Eur. model	PTB	
		Others		VLF	MPR-1

US MODEL : HL6955SBK/SFK (Option)
EUR. MODEL : HL6955SFKL

SPECIFICATION
OF
19"V AUTO-TRACKING COLOR DISPLAY MONITOR

MAR.4,1991

NO.	TYPE			MITSUBISHI STANDARD	REMARKS
1	CRT	Size		19"V	
		Dot Pitch (mm)		0.31 Dot	
		Phosphor Type		P22	
		Face-plate		·AR-Panel (for US) ·AR-Panel with Anti-static (for Eur.)	(Option for US) Anti-static coating (F-Coating)
		Light Transmission		Tinted (51%)	
		Focusing method		DBF	
2	SCANNING	Horizontal Freq. (KHz)		30~ 64KHz	
		Vertical Freq. (Hz)		50~130Hz	
3	SIGNAL INPUT	Video R. G. B.		Analog	
		Sync.		Sync. on Green video / Composite-Posi. & Nega. / Separated-Posi. & Nega.	
		Termination (Impedance) (Ω)	Video	75Ω / HIGH IMPEDANCE	
			Sync.	2.2KΩ / HIGH IMPEDANCE	1.5~5Vp-p
4	VIDEO AMP	Dot Clock Rate		110MHz	
5	SCREEN CHARACTE-RISTICS	Display Resolution		1280 dots×1024 lines	
		Display size (mm)	Horizontal	345/350mm (Typ.)	
			Vertical	275/265mm (Typ.)	
		Misconvergence	Center	0.35mm (Typ.)	
			Other	0.5mm (Typ.)	
		Brightness		100nit	(Tinted)
6	CONTROLS	User Controls	Front	Power SW, Degauss SW, Contrast, Brightness, H-position, H-width, V-position, V-height, Mode select SW, Pre-set-Recall SW	
7	CONNECTOR & CABLE	Power Input	Connector	3P IEC PLUG	
		Signal Input	Connector	BNC	
8	POWER SUPPLY	Operating range		AC100~120V / 220~240V 50 / 60Hz, Automatically	
9	CABINET	Plastic with Tilt / Swivel stand		Mitsubishi standard	
10	REGULATORY	Safety	US model	UL/CSA	
			Eur. model	TÜV	
		EMI	US model	FCC-A	
			Eur. model	VDE-B	
		X-Ray	US model	DHHS	
			Eur. model	PTB	
		Others		VLF	MPR-1

US MODEL : HL7955SBK/SFK (Option)
EUR. MODEL : HL7955SFKL

SPECIFICATION
OF
19"V AUTO-TRACKING COLOR DISPLAY MONITOR

MAR.4,1991

NO.	TYPE			MITSUBISHI STANDARD	REMARKS
1	CRT	Size		19"V	
		Dot Pitch (mm)		0.31 Dot	
		Phosphor Type		P22	
		Face-plate		·AR-Panel (for US) ·AR-Panel with Anti-static (for Eur.)	(Option for US) Anti-static coating (F-Coating)
		Light Transmission		Tinted (51%)	
		Focusing method		DBF	
2	SCANNING	Horizontal Freq. (KHz)		30~78KHz	
		Vertical Freq. (Hz)		50~130Hz	
3	SIGNAL INPUT	Video R. G. B.		Analog	
		Sync.		Sync. on Green video / Composite-Posi. & Nega. / Separated-Posi. & Nega.	
		Termination (Impedance) (Ω)	Video	75Ω / HIGH IMPEDANCE	
			Sync.	2.2KΩ / HIGH IMPEDANCE	1.5~5Vp-p
4	VIDEO AMP	Dot Clock Rate		130MHz (Typ.)	
5	SCREEN CHARACTE-RISTICS	Display Resolution		1280 dots×1024 lines	
		Display size (mm)	Horizontal	345/350mm (Typ.)	
			Vertical	275/265mm (Typ.)	
		Misconvergence	Center	0.35mm (Typ.)	
			Other	0.5mm (Typ.)	
		Brightness		100nit	(Tinted)
6	CONTROLS	User Controls	Front	Power SW, Degauss SW, Contrast, Brightness, H-position, H-width, V-position, V-height, Mode select SW, Pre-set-Recall SW	
7	CONNECTOR & CABLE	Power Input	Connector	3P IEC PLUG	
		Signal Input	Connector	BNC	
8	POWER SUPPLY	Operating range		AC100~120V / 220~240V 50 / 60Hz, Automatically	
9	CABINET	Plastic with Tilt / Swivel stand		Mitsubishi standard	
10	REGULATORY	Safety	US model	UL/CSA	
			Eur. model	TÜV	
		EMI	US model	FCC-A	
			Eur. model	VDE-B	
		X-Ray	US model	DHHS	
			Eur. model	PTB	
		Others		VLF	MPR-1

2. CIRCUIT DESCRIPTION

2.1 GENERAL

This display monitor is composed of four blocks as shown in Fig. BLOCK DIAGRAM.

(a) Power supply block (PCB-POWER)
(b) Control block (PCB-CONT, PCB-FUNC)
(c) Deflection block (PCB-DEFL)
(d) Video block (PCB-VIDEO, PCB-CRT)

Every blocks will be explained in detail in following chapters.

In this chapter, the auto-tracking function will be explained generally.

The input sync signals whose horizontal scanning frequency of 30-60KHz (30-78KHz) and vertical scanning frequency of 50-90Hz can be locked on without adjusting H-HOLD/V-HOLD control.

This automatical lock function is performed by the circuits in the PCB-CONT.

To maintain optimum operation of circuits over wide frequency range, some elements in circuits are switched according to the horizontal frequency of input sync signal which is divided into following ranges.

30 - 33.4KHz	L - Range	
33.4 - 42.1KHz	M1 - Range	
42.1 - 54.3KHz	M2 - Range	
54.3 - 64KHz	H - Range	
* 54.3 - 68.1KHz	H1 - Range	
* 68.1- 78KHz	H2 - Range	* HL7955

The circuit in PCB-CONT judges the frequency range of input sync signal, and provides selection signals. PCB-CONT also maintains the other control signals to adjust the brightness, picture size etc on the screen electrically.

2.2 POWER SUPPLY BLOCK

2.2.1 GENERAL

(1) The power supply block can be operated in case either 100 - 120VAC or 200 - 240VAC power line.
(2) The selection of power line voltage is performed by automatically.
(3) The output lines of this power supply are shown in Table 2-1 with their main loads.
(4) The power supply works as switched mode operation with RCC (Ringing Choke Converter) configulation. Output voltages are regulated by 3rd winding. The switching frequency is corresponding to load currents. The 50-150V line is regulated by the DC chopper method from 165V line.

OUTPUT LINE	MAIN LOAD
- 6.3V	CRT Heater
24V	V-Deflection, H-Drive
28V	V-Deflection
5V	CPU, G/A
12V	VIDEO-Circuit, H-Deflection
80V	VIDEO-Circuit
165V	HV-Circuit
50-150V	H-Deflection

2.2.2 RECTIFY AND FILTER CIRCUIT

(1) The AC input voltage is rectified by the diode bridge D901.
The rectified voltage is filtered by changing C901 and C902.

(2) In case of 100-120VAC line input, the rectify circuit works as a double voltage rectify operation by setting the SW901 to the 100V position.
In case of 200-240VAC line input, the rectify circuit works as a normal all wave rectify operation by setting the SW904 to the 200V position.

(3) The thermistor TH901 is equipped to suppress the inrush current when power swithed on.
The relay RY901 shunts TH901 to eliminate the power loss of TH901 when the control circuit starts to oscillate.

2.2.3 DEGAUSS CIRCUIT

(1) This monitor is provided the auto and manual degauss function.

(2) The auto-degauss circuit is operated after started up the micro computer which is controlled by the degauss signal from micro computer via 1pin of connector P3, then it turns on Q955, and RY901 operates degauss circuit during approx. 5sec, so that the degauss current flows to the degauss coil via RP901 or RP902.

(3) The manual degauss circuit works when push the degauss switch (SW903) during approx. 5sec which is controlled by the degauss signal from micro computer.

2.2.4 PRIMARY CIRCUIT

(1) Main DC power supply of this monitor consists of RCC (Ringing Choke Converter). When the power switch is turned on, triggering current is fed through R905 and R909 to 2pin of IC991 to flow the collector current of Q1 in IC991. The collector current of Q1 begins to flow, then inductive voltage is generated between 8 and 6pin of T931 so that the differential base current caused by C908 and R904 gives to the base of Q1. As the load current of secondary winding at power switched on, are very small, very small peak collector current Ip' of Q1 is needed. The circuit comes to stabilize by repeating the action stated above.

(2) In normal operating condition, the circuit works as follows.
The collector current Ic of Q1 increases according to the equation of $Ic = V1 / Lp \times Ton$.
(Lp: Primary winding inductance, V1: Input voltage)
When the Ic reaches $Ip = Ib \times hfe$, Vce of Q1 increases immediately and the charge current for C922 flows through D910 and D909. In the same time, secondary currents begin to flow through D951 ~ D955. As soon as the energy which is stored in primary winding of T931 transfers to secondary circuit, the currents through D951 ~ D955 also reach to 0 (zero).
In that time, all winding voltages of T931 are zero, and the Q1 starts by triggering resistor R905 and R906. Next cycle, the base current of Q1 is supplyed from the charge of C922 by Q902 turned on.

(3) The third winding of 7 - 6 pin works as the detector to stabilize the secondary voltage. If the voltage of secondary windings increases, voltage of 7 - 6 also increase. So the base current of Q1 in IC991 is detected by Q5 and Q3 in IC991. In that result, output voltage decrease.

(4) D914 and Q903 work as the protector for excess AC voltage. If the AC voltage selector SW904 is set to 100V position, D901 is connected as double voltage rectifier. In that time, if the AC input is connected to 200V line, DC voltage across C901, positive and negative reaches over 500V, then the avalanche diode D912 and D913 will be turned to short the circuit. So the fuse F901 will be blowed, and components are avoided to be broken.

2.2.5 SECONDARY CIRCUIT

(1) In this paragraph, chopper circuit which is applied for Auto-scanning circuit will be explained.

(2) Chopper circuit mainly consists of T951, Q951, Q952 and Q953.

During the Q951 is turned on, the base current of Q951 is supplied by the discharge current from C969. When Ic of Q951 reaches to the saturated level Ip = Ib × hfe, Q951 is turned off immediately. Then the voltage of 6 pin increase to charge the C969 through D958 to prepare the next switching cycle. The output voltage +B (Q951 emitter voltage) is regulated by following procedure. If the voltage of F/B terminal is higher, base current of Q953 increase. So the base current of Q952 also increase to by-pass the base current of Q951. In that result, peak collector current Ip of Q951 decreases to lower the output voltage.

2.3 DEFLECTION BLOCK

Deflection block consists of horizontal, vertical, high voltage ciruits, and are fundamentaly operated by changing DC control voltages.

2.3.1 HORIZONTAL DEFLECTION CIRCUIT

(1) All DC control voltages are fed from PCB-CONT.

Positive H-Sync signal is fed from PCB-VIDEO, and DC voltage in accordance with that frequency is given in 2 pin of J503 to oscillate horizontal frequency. If H-oscillation frequency is high, relative DC voltage of 2 pin of J503 is higher, then the charge current to add to time constant circuit consist of R587 and C509 increases to shorten charge time. So that the oscillation frequency goes to higher. When no sync signal is connected, free running frequency is approx. 47KHz.

(2) The output of 13 pin of IC501 works as a drive voltage for HV circuit, and H-deflection circuit. The principle of horizontal deflection is shown in Fig. 2-2. The voltage in Fig. 2-2 indicate approx. value at 64KHz operation. Q507 works as a horizontal output, and D508, D537 and D538 work as dumper diodes. Q514, Q515, Q516 and Q527 are switched on as follows in accordance with the horizontal frequency to compensate the horizontal linearity.

<HL6955/HL6945>

30 ~ 33.4KHz	Q514, Q515 and Q516 are on.
33.4 ~ 42.1KHz	Q514, and Q516 are on.
42.1 ~ 54.3KHz	Q515 is on.
54.3 ~ 64KHz	Q514 is on.

<HL7955>

30 ~ 33.4KHz	Q514, Q515 and Q516 are on.
33.4 ~ 42.1KHz	Q514, and Q516 are on.
42.1 ~ 54.3KHz	Q515 is on.
54.3 ~ 68.1KHz	Q514 is on.
68.1 ~ 78KHz	No FET is on.

(3) In Fig. 2-2, the horizontal output Tr Q507 is turned on by the drive pulse from IC501 via Q520 and Q506. During Q507 is turned on, the deflection current Idy increase from 0 to positive max Ip in accordance with the equation $Ip = V_{DY} / L_{DY} \times Ton$.

(L_{DY}: parallel value of HOT and DY)

When the drive pulse goes to negative polarity, Q507 is turned off, and I_{DY} begins to flow to charge C527 and C599 (HL6955, HL7955) until Vcp reaches max. value " $\pi/2 \times Ts/Tr \times Vcc$ ". As soon as Vcp reaches max. value, discharge current from C527, C528 and C599 flows to DY.

This charge and discharge period is called "retrace time" which is expressed by equation $Tr = \pi\sqrt{L_{DY} \times C_R}$.

When the Vcp reaches to 0V, the dumper diodes are turned on and I_{DY} begins to flow from Ip to 0 (zero) ampere. Normally, on period of Q507 overlaps with on period of dumper diodes, so the crossover distortion appeares at 0 (zero) ampere point of I_{DY}. D537 and D538 are high speed dumper diodes to flow the transient current, and main dumper current flows through D508. The horizontal output transformer T502 works as a choke coil connecting between deflection yoke and power supply, and also works to get some DC power sources.

(4) The power supply voltage connected to 7 pin of T507 is modulated to parabolic wave form by Q410 and Q411 to compensate side pin cushon distortion. The parabolic wave is generated by IC405 and amplified by Q406 ~ Q408, Q416 and fed through buffer amplifiers Q415, Q409 to the base of Q410 to modulate. Also, 7pin voltage is varied from approx. 50V to 150V to regulate the horizontal width regardless of horizontal frequency. This is performed to maintain the DC voltage of the cathode of D511 which is proportional to the collector pulse voltage of Q507. The DC voltage across C531 is fed to the power supply circuit as the feedback voltage through 1 pin of J501 which controlls to stabilize the voltage as same as chapter 2.1.5.

(5) Q521 ~ Q524 consist of regulator to optimize the driving condition of H-deflection output Tr Q507. The output voltage of Q524 is controlled by 2modes.

(5-1) If the H-width control voltage from 7 pin of J504 decreases, the emitter current of Q522 also decreases, then output voltage of Q524 increases to supply enough driving power for Q507. Refer to Fig. 2-3.

(5-2) On the other hand, when the 15 pin voltage of J504 decreases according to the lower horizontal frequency, the base of Q521 also decreases, so the output voltage of Q524 increases to optimize the base current of Q507. Refer to Fig. 2-4.

By the manner stated (5-1) and (5-2), Q507 is driven enough, and power loss is minimized.

Fig. 2 – 3

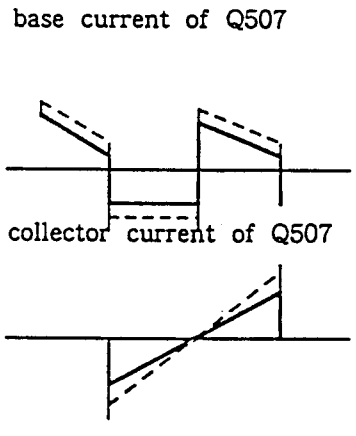
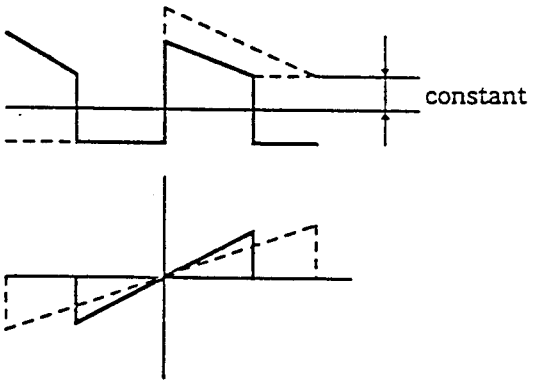


Fig. 2 – 4



(6) 13 and 14 pin of J504 are control signals to change AFC components C517 ~ C520 and R5C2 ~ R5C5. Combination of these are as follows;

< HL6945 >		< HL6955/HL7955 >	
fH = 30 ~ 40.4KHz	C514/R5C5	fH = 30 ~ 40.4KHz	C514/R5C5
40.4 ~ 49.1KHz	C520/R5C4	40.4 ~ 49.1KHz	C520/R5C4
49.1 ~ 59.5KHz	C518/R5C3	49.1 ~ 59.5KHz	C518/R5C3
59.5 ~ 64KHz	C517/R5C2	59.5 ~ 80KHz	C517/R5C2

2.3.2 HIGH VOLTAGE CIRCUIT

(1) HIGH VOLTAGE SUPPLY AND CONTROL CIRCUIT

The principle of the high voltage supply circuit is basically same as the horizontal deflection. The drive pulse which is same as the horizontal deflection is connected to the base of Q603 via the FET Q602, and switches Q603. The flyback transformer steps up collector pulse generated when Q603 turned off to the high voltage. The high voltage should be stabilized to prevent the fluctuation of the size of image on screen depended on the beam current.

In this circuit, the supply voltage of the circuit is controlled to stabilize the high voltage output. The series regulator composed of Q605 , Q606 and Q607 controlls the supply voltage of the circuit. The high voltage is attenuated by the high voltage resistor, approx. 350 mega-ohms (for HL6945), 750 mega-ohm (for HL6955/HL7955), equipped inside the flyback transformer, and R625. This voltage is fed to the base of Q607 which works as the error amp;ifier for the series regulator via the emitter follower Q608, and compared with the reference voltage stabilized by D606. If the high voltage increases, the feedback voltage increases, and the base current of Q607 increases and the collector voltage of Q607 decreases, and then the emitter voltage of Q605 decreases. It means the decrease of the supply voltage to the high voltage circuit, and the initial increase of the high voltage is corrected.

The high voltage is already set to the pre-arranged value (29KV STD) by VR602 (HV-ADJ).

(2) HIGH VOLTAGE SAFETY CIRCUIT

- CAUTION -

Safety circuit described below are equipped to prevent abnormal increase of the high voltage that may cause a X-ray radiation of harmful level. No modification should be applied to the high voltage supply and safety circuits.

The safety circuit works as the over voltage protecter for the high voltage.

Excessive high voltage is detected through the 3rd winding in FBT and is fed to HOLD-DOWN CIRCUIT. The voltage across the capacitor C605 which is proportional to the high voltage is fed to HOLD-DOWN CIRCUIT through R611, VR601 and R612. When high voltage reaches 29.5KV, the voltage across D620 is over 7.6V, and gate of Q602 is connected to the secondary ground via Q622. When this happens, horizontal oscillation signal can no longer drive Q601 and Q602, and high voltage goes down. Once hold down circuit operates, hold down status is held till power off.

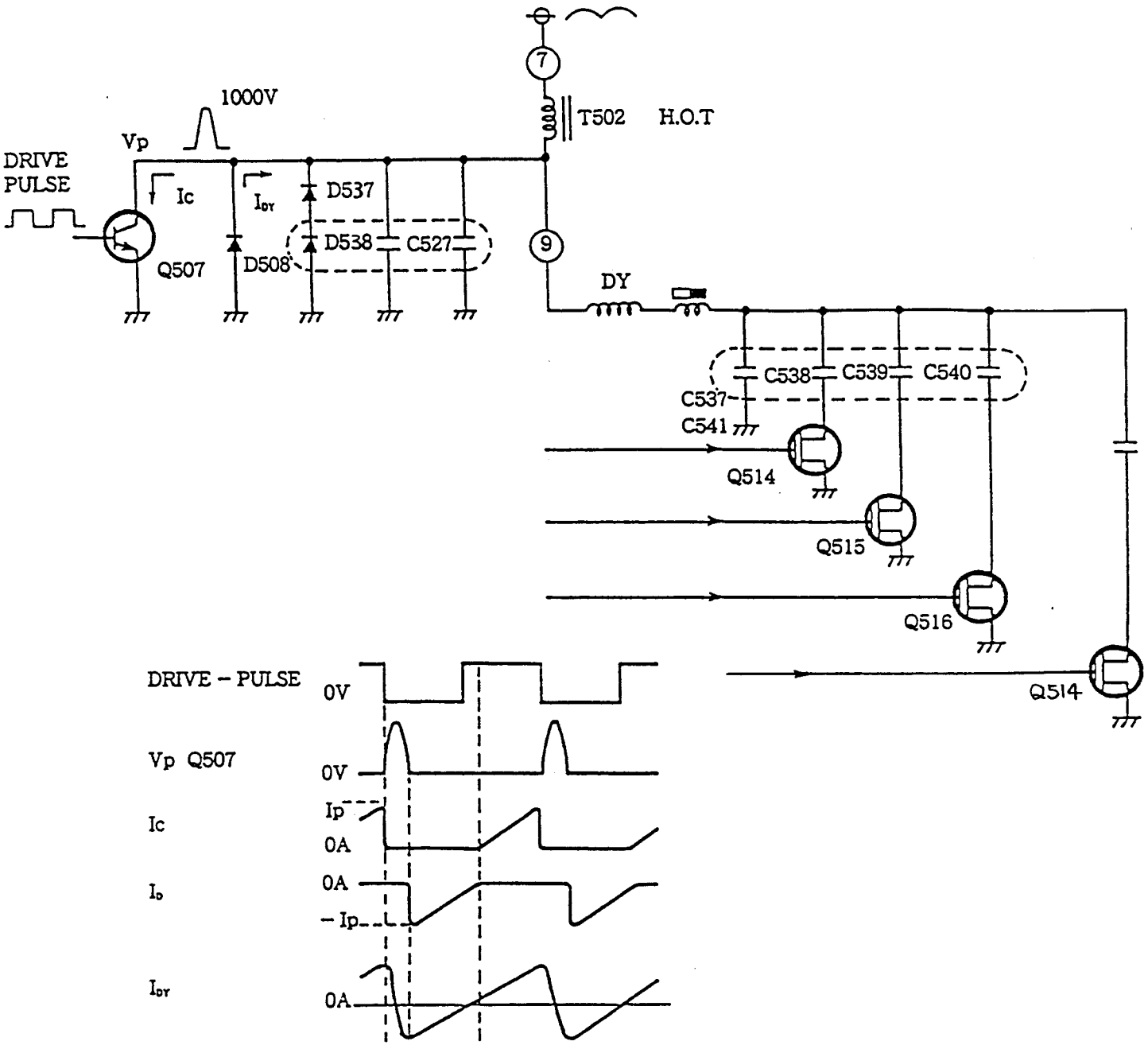
2.3.3 VERTICAL DEFLECTION CIRCUIT

Vertical deflection is performed by one IC, and some attached components

(1) The oscillating frequency is controlled by applying DC voltage at 4 pin of IC401. If the DC voltage at 4 pin of IC401 is higher and threshold level goes to high, oscillating frequency goes to lower.

(2) The vertical height of raster is controlled by DC voltage of 1 pin of J401. If the DC voltage of 1 pin of J401 becomes lower, the current from 7 pin of IC401 increases, so that the vertical height becomes wider.

Fig. 2 – 2 Principle of Horizontal Deflection



2.4 VIDEO BLOCK

2.4.1 VIDEO AMPLIFIER

(1) The circuits for video amplifiers are in the PCB-VIDEO.

(2) There are three video amplifiers for RGB inputs which have identical circuit configuration. For simplification, the green-channel will be explained in this chapter.

(3) This amplifier is composed of the pre-amplifier section and the main-amplifier section. The video signal (0.7Vp-p STD) is amplified to approx. 3Vp-p in the pre-amplifier section and is amplified again to approx. 30Vp-p during the main-amplifier section.

(4) The input signal is fed to 1 pin of IC261 via the emitter follower Q261, and Q262. The gain of IC261 is controlled by the DC voltage of 4 pin, higher voltage of 4 pin makes the gain of IC261 larger. This IC also provides the function of the black level clamp. For this function, the output signal drived by R281 and R266 is connected to 11 pin, the voltage of clamp level is fed to 9 pin, and the clamp pulse which is same phase and width as the horizontal sync. pulse, is fed to 12 pin. The voltage level of 11 pin is compared with the voltage level of 9 pin during the clamp pulse active, and the DC level of output signal of this IC is controlled to make the 11 pin voltage to be equal to the 9 pin voltage. This function can provide good stability of the black level of video output signal.

(5) The output signal of IC261 is connected to the main-amplifier section via emitter follower Q264.

(6) The main amplifier section is composed of the amplifier and the push pull emitter follower.

(7) C275, R273, C276 and R274 is composed of the emitter peaking circuit for IC263. C274 and the other resistors connected to IC263 also improve the characteristics of video frequency response.

(8) To display a pure white image on screen, both the DC level and the amplitude of video output signal should be adjusted as the three guns characteristics of CRT's are not identical. The DC level of cathode can be adjusted by VR262 (G-CUT-OFF) and the amplitude of video output signal can be adjusted by VR261 (G-DRIVE).

2.4.2 SYNC SEPARATION CIRCUIT

(1) This monitor can be synchronized under the following conditions.
   a. Composite sync. signal on green video
   b. Composite sync. signal (negative going)
   c. Horizontal/vertical sync. signals (positive or negative going)

(2) The sync. signal separation circuit provides following functions.
   a. Separating the composite sync. signal from the video signal
   b. Amplifying the composite sync. signal level to TTL level
   c. Separating the horizontal and vertical sync. signal from the composite sync. signal

(3) In case of using the composite sync. signal on green video, the sync. signal is automatically separated by IC301.

(4) In case of using the composite sync. signal on green video, IC301 works as a separater which separates the composite sync. signal from the green video, and the amplifier which amplifies the signal amplitude to TTL level. In other cases, IC301 works as only the amplifier. The TTL level composite sync. or horizontal sync. signal is fed to 9 pin of IC301.

(5) IC301 works as the separater of horizontal and vertical sync. signal, and the generator for the clamp pulse.

(6) IC302 is provided to form the vertical sync. signal and to apply for dual vertical polarity of VGA. IC302 also provides the blanking pulse from 6 pin.

2.4.3 ABL CIRCUIT

(1) This circuit is for limiting the beam current of CRT, and is in PCB-VIDEO.

(2) The brightness of CRT is determined by the beam current. The beam current is detected by R624 (PCB-DEFL). When the beam current exceeds the limit value, this circuit makes to reduce the voltage of 4 pin of IC201, IC231 and IC261 which controls the gain of pre-amplifiers. It means that the circuit supresses the output of pre-amplifiers for limiting the brightness of CRT.

(3) When the voltage drop across R624 exceeds the zener voltage of D302, Q301 starts to work, and Q302 is supplied its base current and then the collector pulse voltage of Q302 decreases. As the result, the gain control voltage of pre-amplifiers are decreased.

2.4.4 PCB-CRT

(1) The blanking circut and the bright control circuit are in the PCB-CRT.

(2) The blanking pulse generated in the PCB-VIDEO is fed to Q383 which amplifies the blanking pulse to approx. 60Vp-p negative going pulse. This pulse is connected to G1 of CRT via the emitter follower Q381, Q382 and the coupling capacitor C382. The blanking action is realized, so that the voltage of G1 is kept in the negative potential during the blanking period.

(3) The bright control is performed by adjusting the voltage of G1. VR381 (SUB-BRIGHT) can controlls the brightness of back raster.

2.5 CONTROL BLOCK

2.5-1 GENERAL

1) Frequency Range: f_H = 30~64KHz (HL6945, HL6955) at R_{A0} port (18 pin) low
f_V = 50~130Hz (HL7955) at R_{A0} port (18 pin) high

2) Timing Discrimination: (1) f_H = more than 3KHz
(2) f_V = more than 5Hz
(3) Conbination of H/V sync. signal polarity

3) Max. Timing Number: 20 timings (PRESET; 12, USER 1; 4, USER 2; 4)

2.5-2 ADJUSTMENT MODE

There are four adjustment modes in this monitor.

1) OPERATE Mode
2) SERVICE Mode
3) FACTORY Mode
4) REMOTE Mode

1) OPERATE Mode

The OPERATE Mode is used for the general end user, and is available to adjust the raster size, position, brightness and contrast by the adjustment button on the front panel.

2) SERVICE Mode

The SERVICE Mode has an additional adjustment item for the PCC control from the OPERATE Mode, and the adjustment mode is changed from OPERATE to SERVICE by following procedure.

(1) Push both +/- button of data adjustment then turn on the monitor.

(2) The adjustment item indication LED blinks during approx. 10 sec. for the confirmation.

(3) Push both +/- button of data adjustment, so that the LED indicates V-SIZE on the front panel.

(5) If the above procedure is not finished, or push the other buttons, during the LED blinks, the OPERATE Mode is not changed to the SERVICE Mode.

3) FACTORY Mode

The FACTORY Mode has an additional adjustment item for the vertical free-running frequency control of V-OSC-L and V-OSC-H.

The adjustment mode is changed from OPERATE to SERVICE by following procedure;

3)-1 Mode Selection Switch

Set SW101 on the PCB-CONTROL to the center position (FACTORY Mode position).

3)-2 Front Panel

(1) Push both button of CONTRAST + and BRIGHT - at the same time, then turn on the monitor. (Set SW101 to the OPERATE Mode position)

(2) The afjustment item indication button blinks during approx. 10sec. for the confirmation so the LED indicates "F" (○○○○). ○: LED ON, ✱: LED OFF

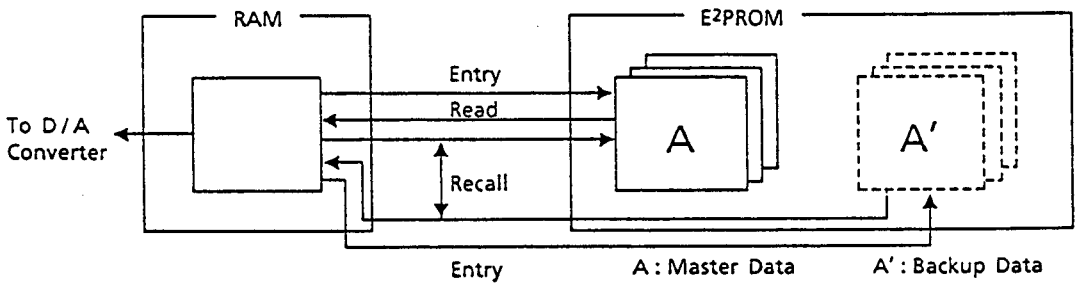
(3) Select the indication "A" (○✱○✱) of LED by the adjustment item select button.

(4) Push both +/- button of data adjustment.

(5) If the above procedure is not finished, or push the other buttons, during the LED blinks, the OPERATE Mode is not changed to the FACTORY Mode.

3)-3 E²PROM Back Up Data Entry

The E²PROM has the back up data for the RECALL function as shown in below.



In the FACTORY Mode, the data entry function is available to change the master data and back up data in the E²PROM.

4) REMOTE Mode

The REMOTE Mode is used for the asjustment data input mode in the factory by using the special equipment.

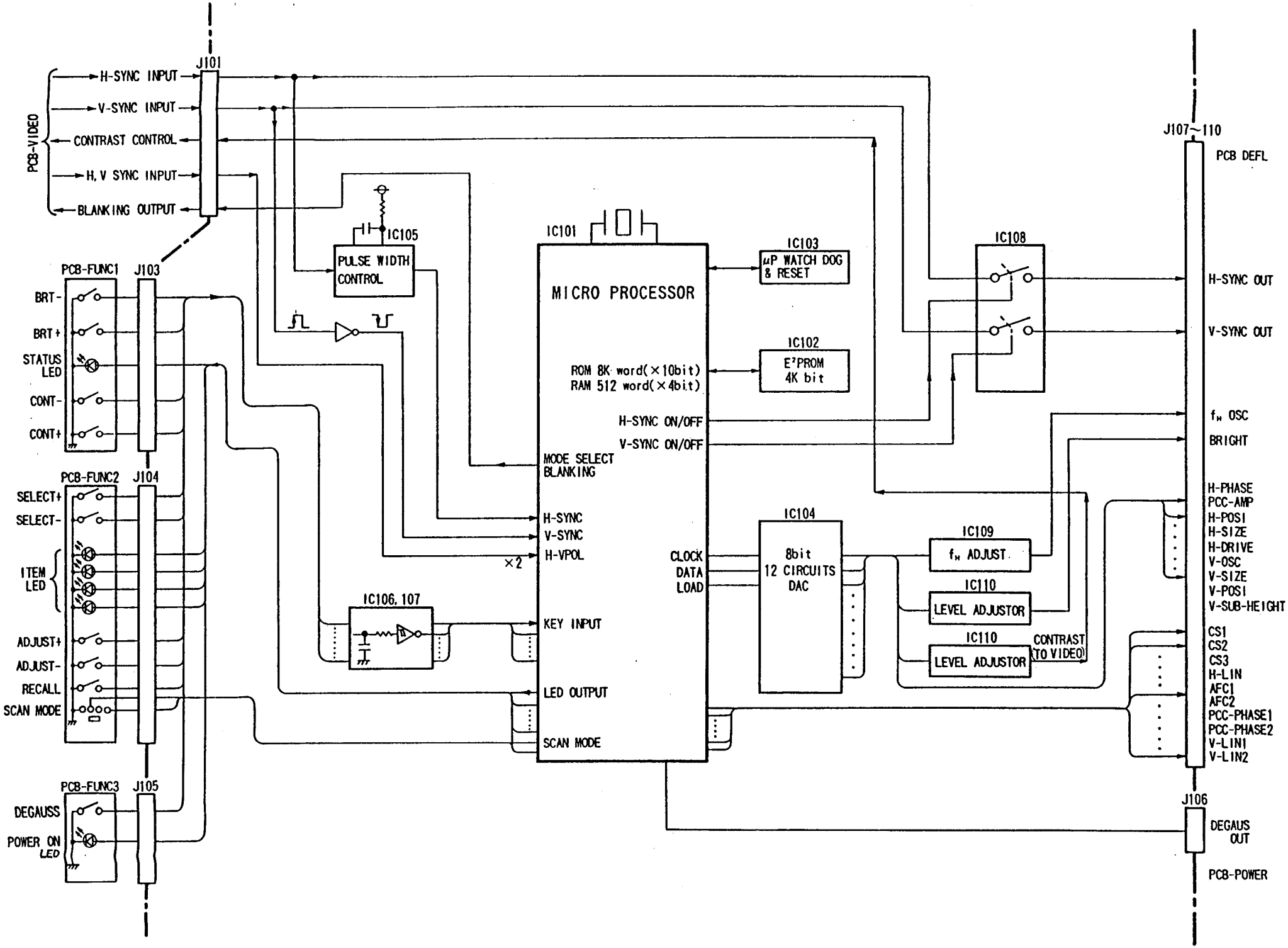
5) RECALL Function

In the PRESET Mode, the all adjustment datas as shown in below are changed to the initial condition when push the RECALL button on the front panel.

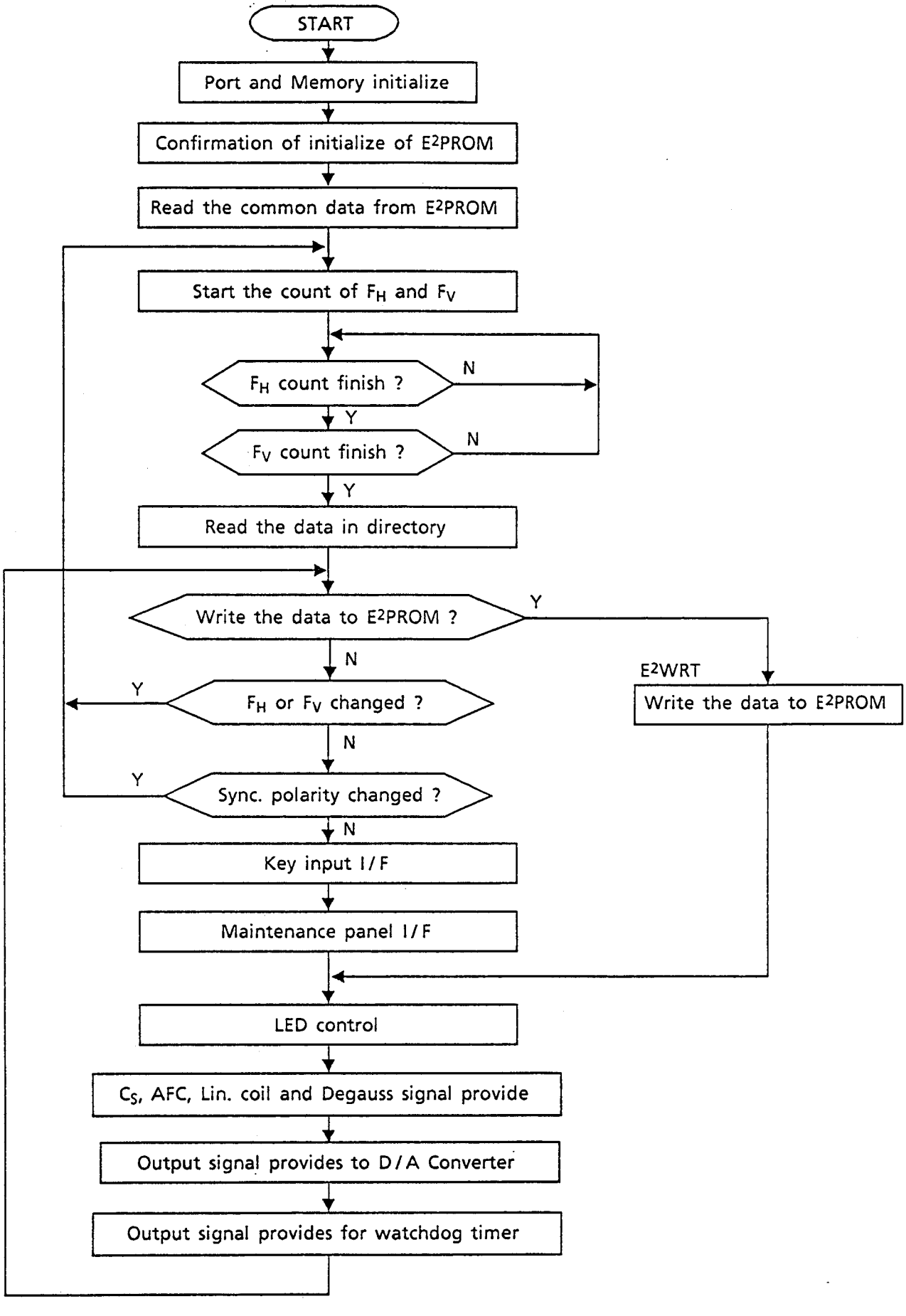
(In case of USER 1 and USER 2 Mode, RECALL function is not available.)

Adjust. Item	LED	Adjust. Mode				RECALL
		OPERATE	SERVICE	FACTORY	REMOTE	
V-SIZE	✱✱✱○	○	○	○	○	○
V-POSI	✱✱○✱	○	○	○	○	○
H-SIZE	✱○✱✱	○	○	○	○	○
H-PHASE	○✱✱✱	○	○	○	○	○
H-POSI	○○✱✱	○	○	○	○	○
PCC-AMP	○○○✱		○	○	○	
PCC-PHASE	○○○○		○	○	○	
V-OSC-L	✱○○✱			○	○	
V-OSC-H	○✱✱○			○	○	

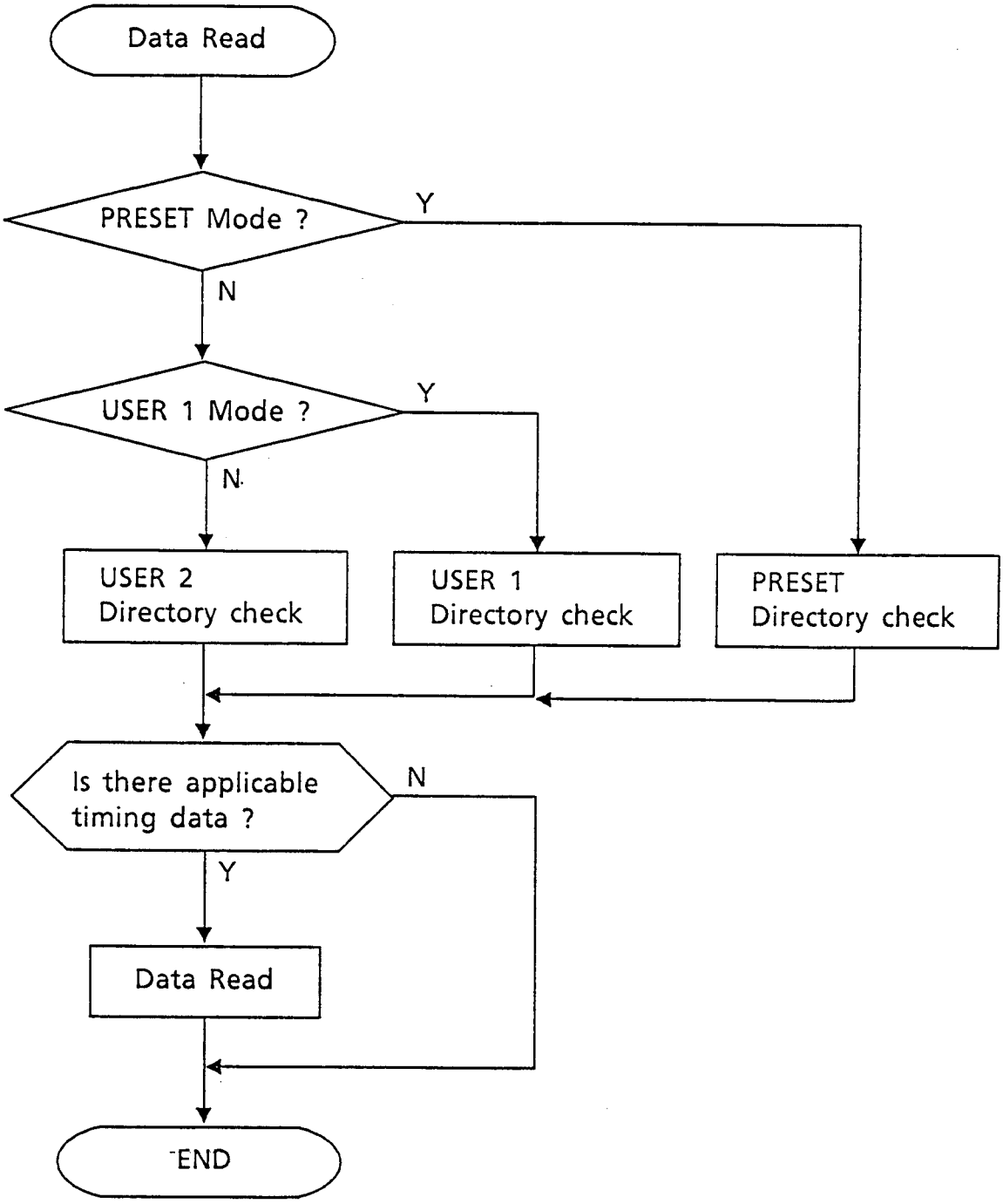
○:ON, ✱:OFF


J101
PCB-VIDEO
H-SYNC INPUT
V-SYNC INPUT
CONTRAST CONTROL
H, V SYNC INPUT
BLANKING OUTPUT
IC105
PULSE WIDTH CONTROL
IC101
MICRO PROCESSOR
IC103
μP WATCH DOG & RESET
IC102
E²PROM 4K bit
ROM 8K word(×10bit)
RAM 512 word(×4bit)
H-SYNC ON/OFF
V-SYNC ON/OFF
MODE SELECT BLANKING
H-SYNC
V-SYNC
H-VPOL
×2
CLOCK
DATA
LOAD
IC104
8bit 12 CIRCUITS DAC
IC106, 107
KEY INPUT
LED OUTPUT
SCAN MODE
IC108
IC109
f_H ADJUST
IC110
LEVEL ADJUSTOR
IC110
LEVEL ADJUSTOR
CONTRAST (TO VIDEO)
PCB-FUNC1
J103
BRT-
BRT+
STATUS LED
CONT-
CONT+
PCB-FUNC2
J104
SELECT+
SELECT-
ITEM LED
ADJUST+
ADJUST-
RECALL
SCAN MODE
PCB-FUNC3
J105
DEGAUSS
POWER ON LED
J107~110
PCB DEFL
H-SYNC OUT
V-SYNC OUT
f_H OSC
BRIGHT
H-PHASE
PCC-AMP
H-POSI
H-SIZE
H-DRIVE
V-OSC
V-SIZE
V-POSI
V-SUB-HEIGHT
CS1
CS2
CS3
H-LIN
AFC1
AFC2
PCC-PHASE1
PCC-PHASE2
V-LIN1
V-LIN2
J106
DEGAUS OUT
PCB-POWER

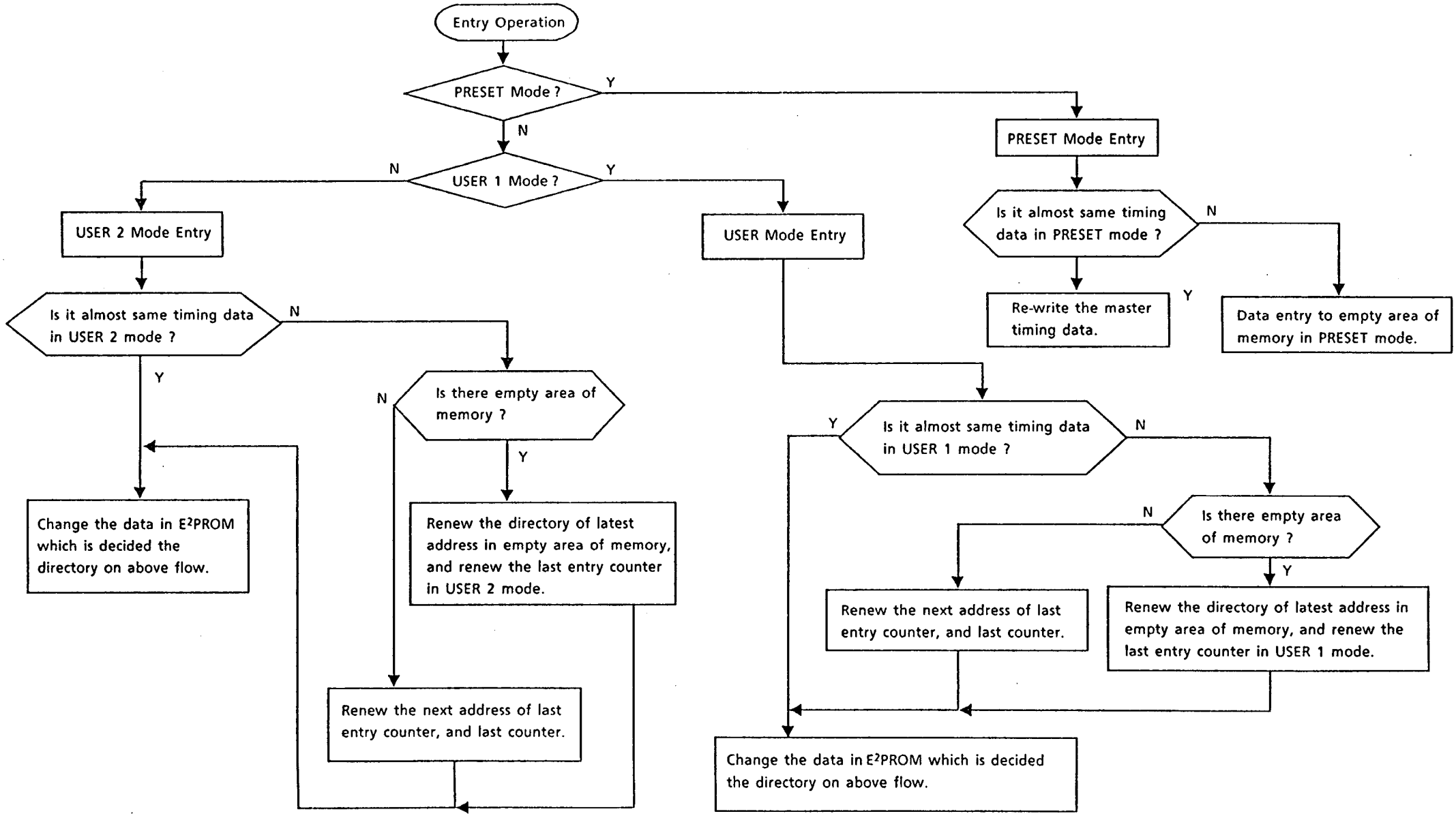
Flow Chart of Micro Computer



Data read flow chart



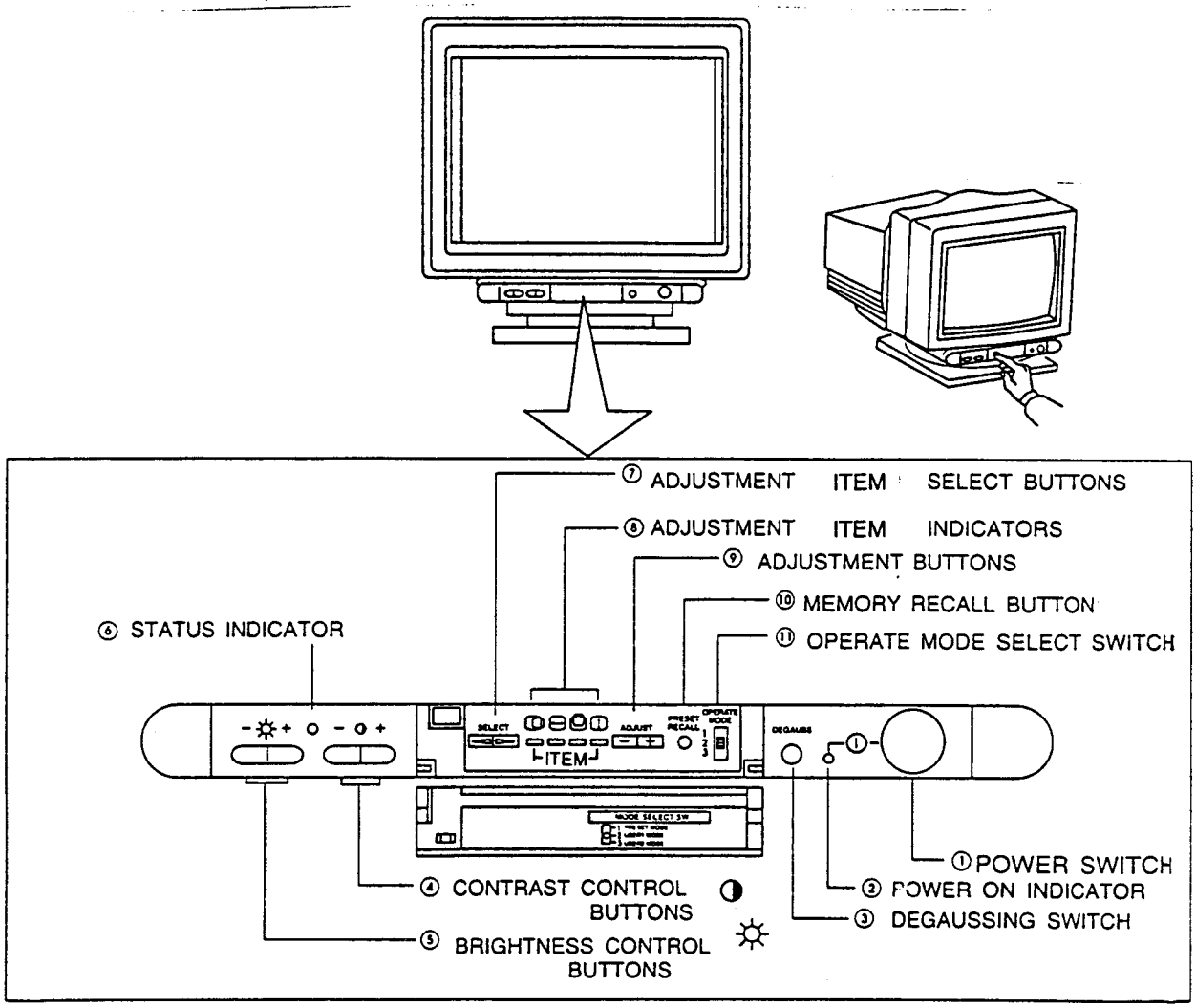
ENTRY OPERATION FLOW CHART


Entry Operation
PRESET Mode ?
Y
N
USER 1 Mode ?
N
Y
USER 2 Mode Entry
USER Mode Entry
PRESET Mode Entry
Is it almost same timing data in PRESET mode ?
N
Y
Re-write the master timing data.
Data entry to empty area of memory in PRESET mode.
Is it almost same timing data in USER 2 mode ?
N
Y
Is there empty area of memory ?
N
Y
Change the data in E²PROM which is decided the directory on above flow.
Renew the directory of latest address in empty area of memory, and renew the last entry counter in USER 2 mode.
Renew the next address of last entry counter, and last counter.
Is it almost same timing data in USER 1 mode ?
Y
N
Is there empty area of memory ?
N
Y
Renew the next address of last entry counter, and last counter.
Renew the directory of latest address in empty area of memory, and renew the last entry counter in USER 1 mode.
Change the data in E²PROM which is decided the directory on above flow.

I / O TABLE FOR THE PCB-CONTROL

Connector	Pin No.	Signal Name	I/O	I/F Level	Function	Connection
J101	1	H-SYNC IN	I	TTL	Horizontal Sync Signal Input	To PCB-VIDEO
	4	V-SYNC IN	I	TTL	Vertical Sync Signal Input	
	6	CONTRAST	O	ANALOG 0-11V	Contrast Control Voltage Output (D/A)	
	8	H-POL	I	TTL	H, V Sync Polarity Discrimination Signal Input	
	9	V-POL	I	TTL	H, V Sync Polarity Discrimination Signal Input	
	11	BLANKING	O	CMOS	Blanking Output at Changing The Timing	
J103	1	LED-STATUS	O	CMOS	STATUS LED Drive Current Output	To PCB-FUNC 1
	2	CONT -	I	CMOS	Contrast (-) Button Input	
	3	CONT +	I	CMOS	Contrast (+) Button Input	
	4	BRT -	I	CMOS	Bright (-) Button Input	
	5	BRT +	I	CMOS	Bright (+) Button Input	
J104	1	ITEM -	I	CMOS	Adjustment Item Selection Button (-)	To PCB-FUNC 2
	2	ITEM +	I	CMOS	Adjustment Item Selection Button (+)	
	3	LED ITEM 4	O	CMOS	Adjustment Item LED Drive Output (H-CENT)	
	4	LED ITEM 3	O	CMOS	Adjustment Item LED Drive Output (H-WIDTH)	
	5	LED ITEM 2	O	CMOS	Adjustment Item LED Drive Output (V-CENT)	
	7	LED ITEM 1	O	CMOS	Adjustment Item LED Drive Output (V-HEIGHT)	
	8	ADJUST -	I	CMOS	Raster Adjustment Button (-) Input	
	9	ADJUST +	I	CMOS	Raster Adjustment Button (+) Input	
	10	RECALL	I	CMOS	PRESET Recall Button Input	
	11	SCAN MODE 2	I	CMOS	Scan Mode SW PRESET/USER 1/USER 2 Input	
	12	SCAN MODE 1	I	CMOS	Scan Mode SW PRESET/USER 1/USER 2 Input	
J105	1	DEGAUSS-IN	I	CMOS	Degauss Button Input	To PCB-FUNC 3
	4	LED-POWER	O	CMOS	Power On LED Drive Output	
J106	1	DEGAUSS-OUT	O	CMOS	Relay Control Output for Degauss	To PCB-POWER
J102	1	SCK	I/O	CMOS	Factory Adjust. I/F (Serial Clock I/O)	To Factory Eqiup.
	2	SI	I	CMOS	Factory Adjust. I/F (Serial Data Input)	
	3	SO	O	CMOS	Factory Adjust. I/F (Serial Data Output)	
	4	RDY	O	CMOS	Factory Adjust. I/F (Serial I/F Ready Output)	
J107	1	H-PHASE	O	ANALOG 0-5V	H-PHASE Control Output (D/A)	To PCB-DEFL
		H-OSC	O	ANALOG 0-5V	Horizontal Osc. Frequency Control Output (D/A)	
J108	4	H-SYNC-OUT	O	TTL	Horizontal Sync Signal Output	
	5	PCC-AMP	O	ANALOG 0-5V	PCC-AMP Control Output (D/A)	
	6	H-CENT	O	ANALOG 0-5V	H-POSI Control Output (D/A)	
	7	H-WIDTH	O	ANALOG 0-5V	H-SIZE Control Output (D/A)	
	8	CS 1	O	CMOS	Cs Selection Output	
	9	CS 2	O	CMOS	Cs Selection Output	
	10	CS 3	O	CMOS	Cs Selection Output	
	11	H-LIN	O	CMOS	Cs Selection Output	
	14	AFC 1	O	CMOS	Cs Selection Output	
	15	AFC 2	O	CMOS	Cs Selection Output	
	16	H-DRIVE	O	ANALOG 0-5V	H-Drive Condition Compensation Output (D/A)	
J109	1	BRIGHT	O	ANALOG 0-11V	Bright Control Voltage Output (D/A)	
	3	V-OSC OUT	O	TTL	Vertical Sync Signal Output	
	7	PCC-PHASE 1	O	CMOS	PCC-PHASE Selection Signal Output	
	8	PCC-PHASE 2	O	CMOS	PCC-PHASE Selection Signal Output	
	11	V-CENT	O	ANALOG 0-5V	V-POSI Control Voltage Output (D/A)	
	13	V-LIN 1	O	CMOS	Not Used	
	14	V-LIN 2	O	CMOS	Not Used	
	15	V-SUB-HEIGHT	O	ANALOG 0-5V	V-SIZE Compensation Voltage Output (D/A)	
J110	1	V-OSC	O	ANALOG 0-5V	Vertical Osc. Control Voltage Output (D/A)	
	2	V-HEIGHT	O	ANALOG 0-5V	V-SIZE Control Voltage Output (D/A)	

FRONT CONTROL PANEL CONFIGURATIONS



3. ADJUSTMENT PROCEDURE

1) HORIZONTAL FREE - RUNNING FREQUENCY ADJUSTMENT
   (1) Connect the frequency counter between red cable of DY and chassis ground.
   (2) Set SW101 on the PCB-CONTROL to center position.
   (3) Receive 40KHz standard timing signal, and adjust the horizontal free-running frequency for a 40±0.2KHz by VR101 (FH-BIAS).
   (4) Receive 64KHz (78KHz) standard timing signal, and adjust the horizontal free-running frequency for a 64±0.2KHz (78±0.2KHz) by VR102 (FH-GAIN).
   (5) After above adjustment, set SW101 to the PCB-CRT side (Operate mode).

2) VERTICAL FREE - RUNNING FREQUENCY ADJUSTMENT
   (1) Connect the frequency counter between the terminal of vertical coil on DY and chassis ground.
   (2) Adjust the SCREEN control for a proper brightness.
   (3) To select the adjustment item of V-OSC-H and V-OSC-L, the FACTORY Mode should be selected according to the procedure stated in the paragraph of FACTORY Mode.
   (4) Select the adjustment item of V-OSC-L by adjustment item selection button on the front panel.
   (5) Adjust the vertical free-running frequency for a 43±1.0Hz by data adjust button.
   (6) Select the V-OSC-H by adjustment item selection button on the front panel.
   (7) Adjust the vertical free-running frequency for a 120±1.0Hz by data adjust button.

3) HIGH VOLTAGE PROTECTOR ADJUSTMENT
   (1) Connect the high voltmeter (full scale bigger than 35KV) between CRT anode and chassis ground.
   (2) Receive 31.5KHz standard timing signal with full white pattern.
   (3) Turn the SCREEN control on FBT to fully counter clock wise position.
   (4) Adjust the high voltage for a 32±0.3KV by VR602 (HV-ADJ).
   (5) Turn slowly VR601 (HV-LIMIT) to obtain the shut down point of high voltage protector.
   (6) Turn off the monitor, then turn VR602 (HV-ADJ) to fully counter clock wise position.
   (7) Turn on monitor, then turn slowly VR602 (HV-ADJ) to confirm the shut down point at 27±0.3KV.
   (8) If necessary, an adhesive may be used for fixing the potentiometer after adjustment.

4) HIGH VOLTAGE ADJUSTMENT
   (1) Connect the high voltmeter between CRT anode and chassis ground.
   (2) Receive 63.3KHz standard timing signal with full white pattern.
   (3) Turn the SCREEN control to fully counter wise position.
   (4) Adjust the high voltage for a 27±0.3KV by VR602 (HV-ADJ).
   (5) If necessary, an adhesive may be used for fixing the potentiometer after adjustment.

- CAUTION - HV-ADJ (VR602) and HV-LIMIT (VR601) controls are sealed and no field serviceable parts to avoid exposure of X-ray. Please contact to qualified personnal of Mitsugishi, if necessary to readjust.

5) SCREEN VOLTAGE ADJUSTMENT
   (1) Connect the high voltmeter between 7 pin of CRT socket and chassis ground.
   (2) Adjust the screen voltage for a 700±10V by SCREEN control on FBT.

- CAUTION - SCREEN control of FBT is also sealed by adhesive. Please contact to qualified personnel of Mitsubishi, if necessary to readjust.

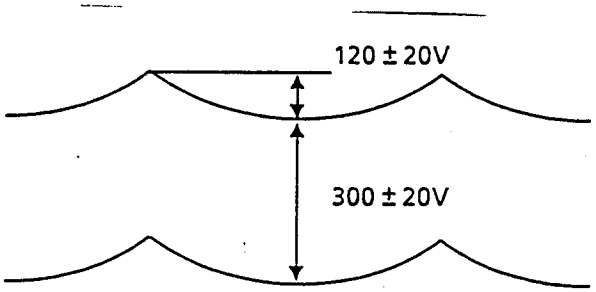
6) SUB-FOCUS ADJUSTMENT (for HL6955 and HL7955 series)

(1) Connect the oscilloscope to the test terminal TP701 on the PCB-SUB-FOCUS.

(2) Rceive 63.3KHz standard timing signal with no raster.

(3) Adust the horizontal prabolic wave to obtain a 300±20V amplitude as shown in below by VR701 (H-ADJ) on the PCB-SUB-FOCUS.

(4) Adust the vertical prabolic wave to obtain a 120±20V amplitude as shown in below by VR702 (V-ADJ) on the PCB-SUB-FOCUS.



7) HORIZONTAL LINEARITY ADJUSTMENT

(1) Receive 31.5KHz standard timing signal with full white raster.

(2) Select the adjustment item of H-SIZE by the adjustment item select button on the front panel, and adjust the horizontal raster size for a 350±5mm by data adjust button.

(3) Receive a cross hatch test pattern signal.

(4) Adjust L508 (H-LIN) on the PCB-COIL to obtain optimum linearity ; so that the squares on characters on the right and left are the same as those on the center.

(5) If necessary, a marking paint may be used to mark the optimum position of linearity coil.

8) CRT CUT-OFF ADJUSTMENT

(1) Receive 56.5KHz standard timing signal with no raster.

(2) Set the CONTRAST control to its maximum, and the BRIGHT control to its center value (push both +/- button at the same time for the center value).

(3) Turn VR202 (R-BIAS), VR232 (B-BIAS) and VR262 (G-BIAS) to their fully clock wise positions.

(4) Adjust the SUB-BRIGHT control (VR303) on the PCB-CRT slowly so that either a red, green or blue back ground begins to appear.

(5) Adjust each CUT-OFF control (VR202, VR232 and VR262) so a white back ground shines slightly.

(6) Adjust the SUB-BRIGHT control (VR303) on the PCB-CRT for a 0.5cd/m^2 (nits) reading on the luminance meter.

9) WHITE BALANCE ADJUSTMENT

(1) Receive 56.5KHz standard timing signal with no raster.

(2) Set the CONTRAST control on the front panel to its maximum value.

(3) Adjust the BRIGHT control on the front panel for an approx. 0.5cd/m^2 (nits) reading on the luminance meter.

(4) Receive a 80×80mm square window pattern signal on the center of screen.

(5) Adjust the DRIVE controls (VR201, VR231 and VR261) on the PCB-CRT for a standard white as follows. If necessary, a color analyzer may be used.

	CONTROL	LUMINANCE cd/m²(nits)	LUMINANCE cd/m²(nits)
RED	VR201	18.1	19.7
GREEN	VR261	70.0	75.0
BLUE	VR231	7.0	7.7
COLOR	X	0.283±0.02	0.283±0.02
COORDINATION	Y	0.297±0.02	0.297±0.02
CRT TYPE		SPB22 (AT)	TZB22 (AT)

10) FOCUS ADJUSTMENT

(1) Receive 56.5KHz standard timing signal with "H" (or ASCII) character pattern.

(2) Set the CONTRAST control to its maximum, and the BRIGHT control to its center value

(3) Adjust the FOCUS control (FOCUS-D or FOCUS-S) on FBT to its optimum position throughout the entire screen.

11) RASTER ADJUSTMENT

11)-1 General

(1) When adjust the raster condition, the Service mode should be selected according to the procedure stated in .

(2) Adjustment item of raster condition can be selected by the selection button on the front panel, and indication of LED is as follows.

Adjust. Item	LED
V-SIZE	✱ ✱ ✱ ○
V-POSI	✱ ✱ ○ ✱
H-POSI	✱ ○ ✱ ✱
H-PHASE	○ ✱ ✱ ✱
H-POSI	○ ○ ✱ ✱
PCC-AMP	○ ○ ○ ✱
PCC-PHASE	○ ○ ○ ○

○; ON
✱; OFF

11)-2 HORIZONTAL POSITION ADJUSTMENT

(1) Receive only sync. signal (no raster).

(2) Set the CONTRAST and BRIGHT control to their maximum value.

(3) Select the H-POSI by adjustment item selection button on the front panel.

(4) Adjust the horizontal raster position by data adjust button so the back ground is positioned in the center of the CRT.

11)-3 PCC ADJUSTMENT

(1) Receive a full white raster pattern signal.

(2) Select the PCC-AMP and PCC-PHASE by adjustment item selection button on the front panel.

(3) Adjust the PCC-AMP and PCC-PHASE by data adjust button to obtain the straight raster.

11)-4 HORIZONTAL WIDTH and PHASE ADJUSTMENT

(1) Receive a full white raster pattern signal.

(2) Select the H-PHASE by adjustment item selection button, and adjust the horizontal phase by data adjust button so the raster is positioned in the center of the CRT screen.

11)-5 VERTICAL HEIGHT and POSITION ADJUSTMENT

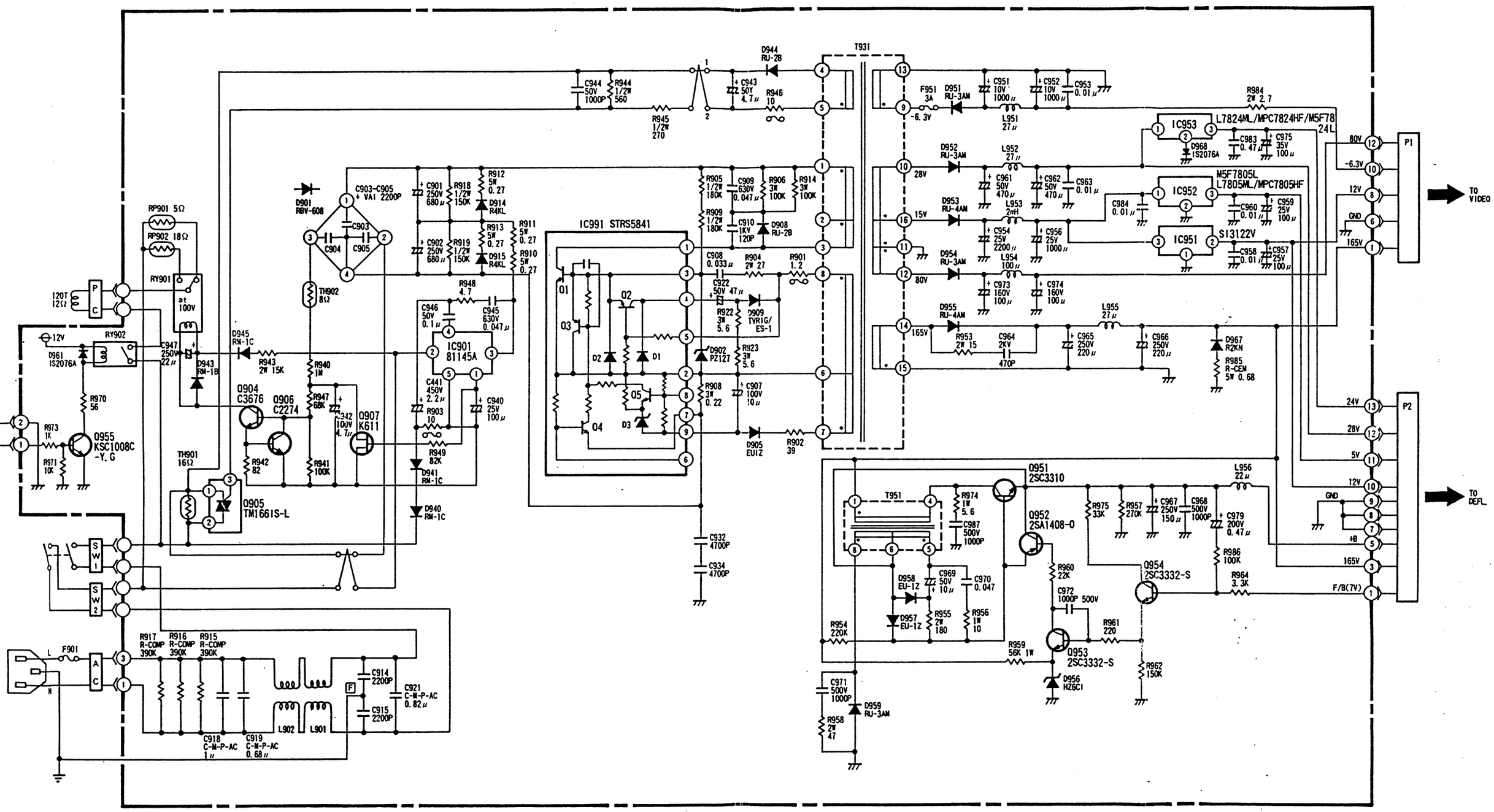
(1) Receive a full white raster pattern signal.

(2) Select the V-SIZE by adjustment item selection button, and adjust the vertical height by data adjust button so the height is 265±10mm.

(3) Select the V-POSI by adjustment item selection button, and adjust the vertcal position by data adjust button so the raster is positioned in the center of the CRT screen.

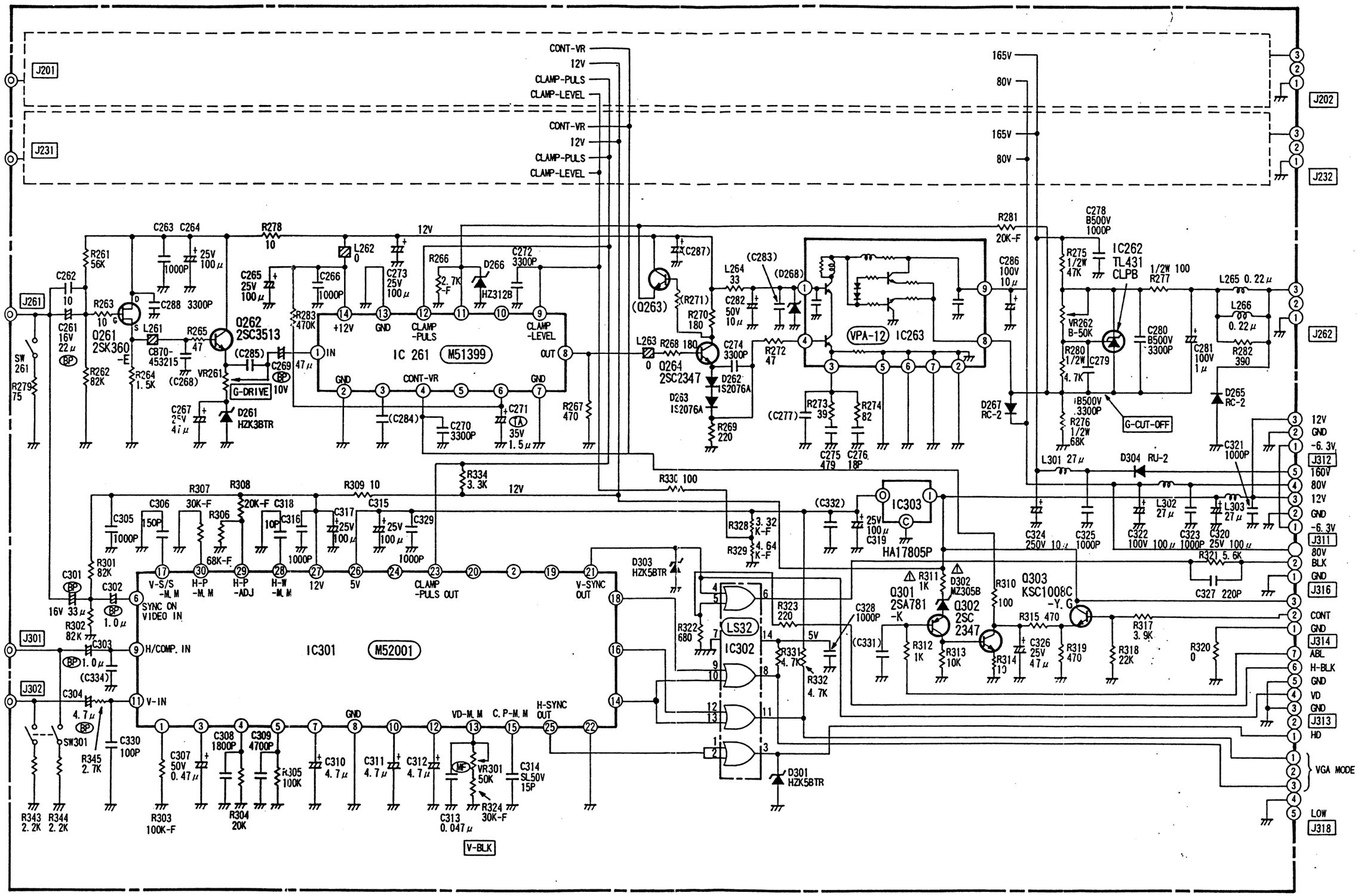
TIMING DATA FOR ADJUSTMENT

H-Frequency (KHz)	78.0	56.5	48.3	35.0	31.5	31.5	31.5	62.3
H-Period (μs)	12.820	17.707	20.676	28.570	31.778	31.778	31.778	16.040
H-Sync. (μs)	0.915	1.813	2.092	2.120	3.813	3.813	3.813	1.700
H-Front Porch (μs)	0.228	0.320	0.369	2.120	0.636	0.636	0.636	0.500
H-Back Porch (μs)	1.907	1.920	2.462	3.170	1.907	1.907	1.907	1.840
H-Display (μs)	9.770	13.653	15.754	21.160	25.422	25.422	25.422	12.000
V-Frequency (Hz)	73.00	70.00	60.00	66.67	59.94	70.00	70.00	60.00
V-Period (ms)	13.690	14.272	16.666	15.000	16.683	14.268	14.268	16.649
V-Sync. (ms)	0.038	0.106	0.124	0.086	0.064	0.064	0.064	0.048
V-Front Porch (ms)	0.038	0.053	0.062	0.084	0.318	0.318	1.176	0.032
V-Back Porch (ms)	0.487	0.513	0.600	1.114	1.048	1.112	1.906	0.417
V-Display (ms)	13.128	13.599	15.880	13.714	15.253	12.711	11.122	16.152
Sync. Signal	Composite	Separate	Separate	Composite	Separate	Separate	Separate	Separate
Sync. Polarity	H: Neg. V: Neg.	H: Neg. V: Neg.	H: Neg. V: Neg.	H: Neg. V: Neg.	H: Neg. V: Neg.	H: Neg. V: Pos.	H: Pos. V:Neg.	H: Neg. V:Neg.
Remarks				Apple Mac II	VGA 480lines	VGA 400lines	VGA 350lines	



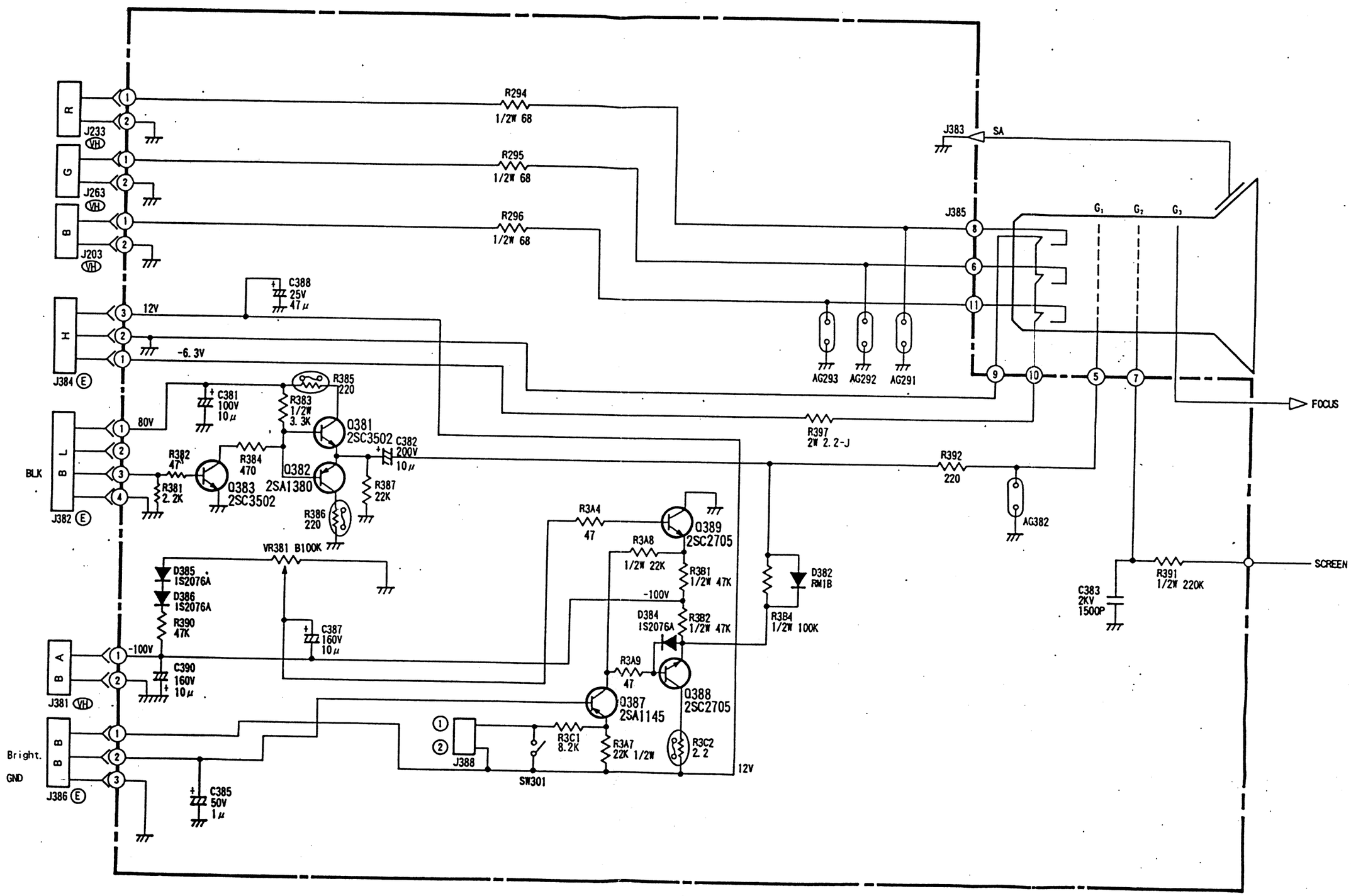
MODEL:HL6955/HL6945/HL7955

POWER CIRCUIT



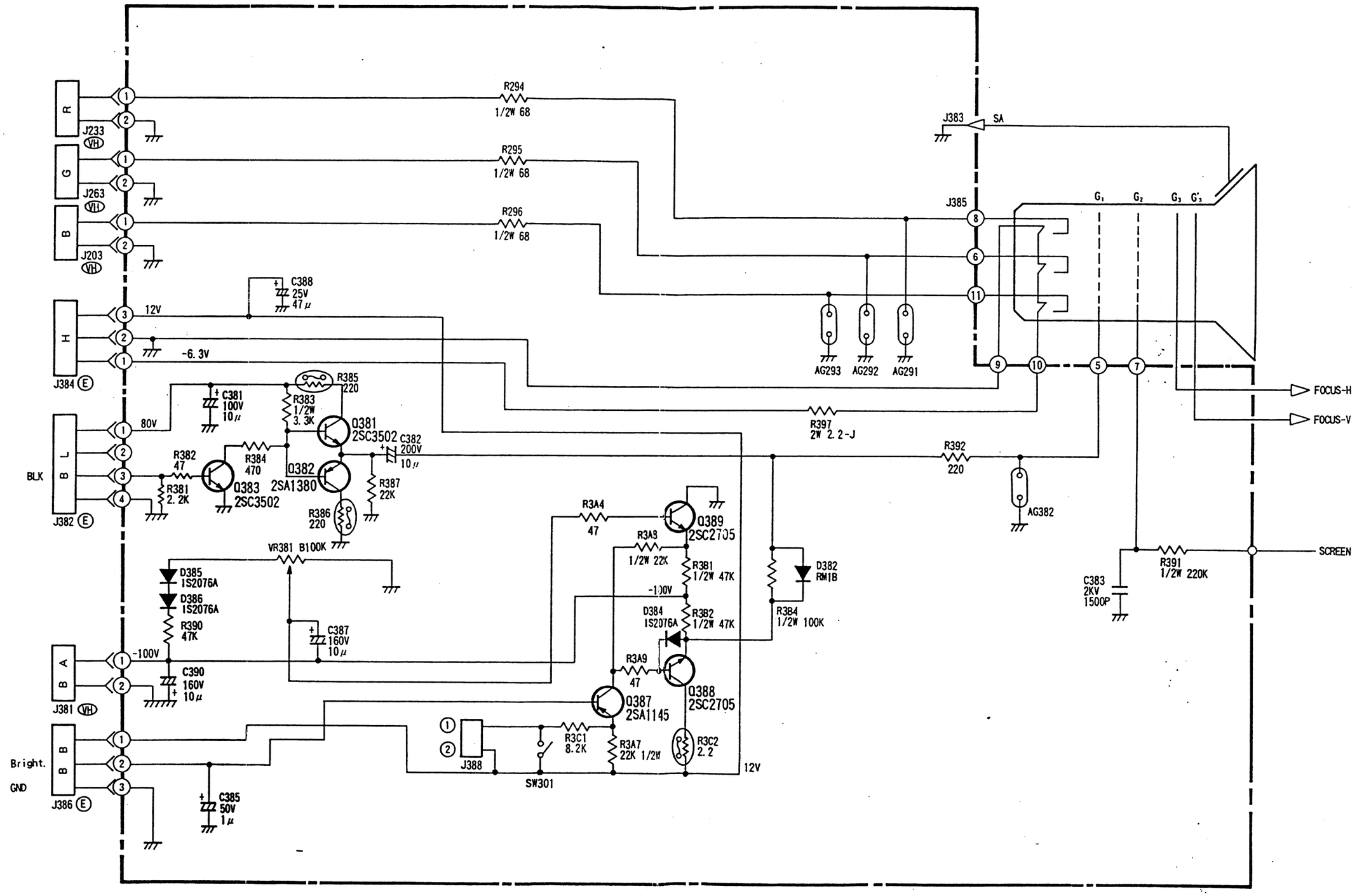
MODEL:HL6955/HL6945/HL7955

VIDEO CIRCUIT



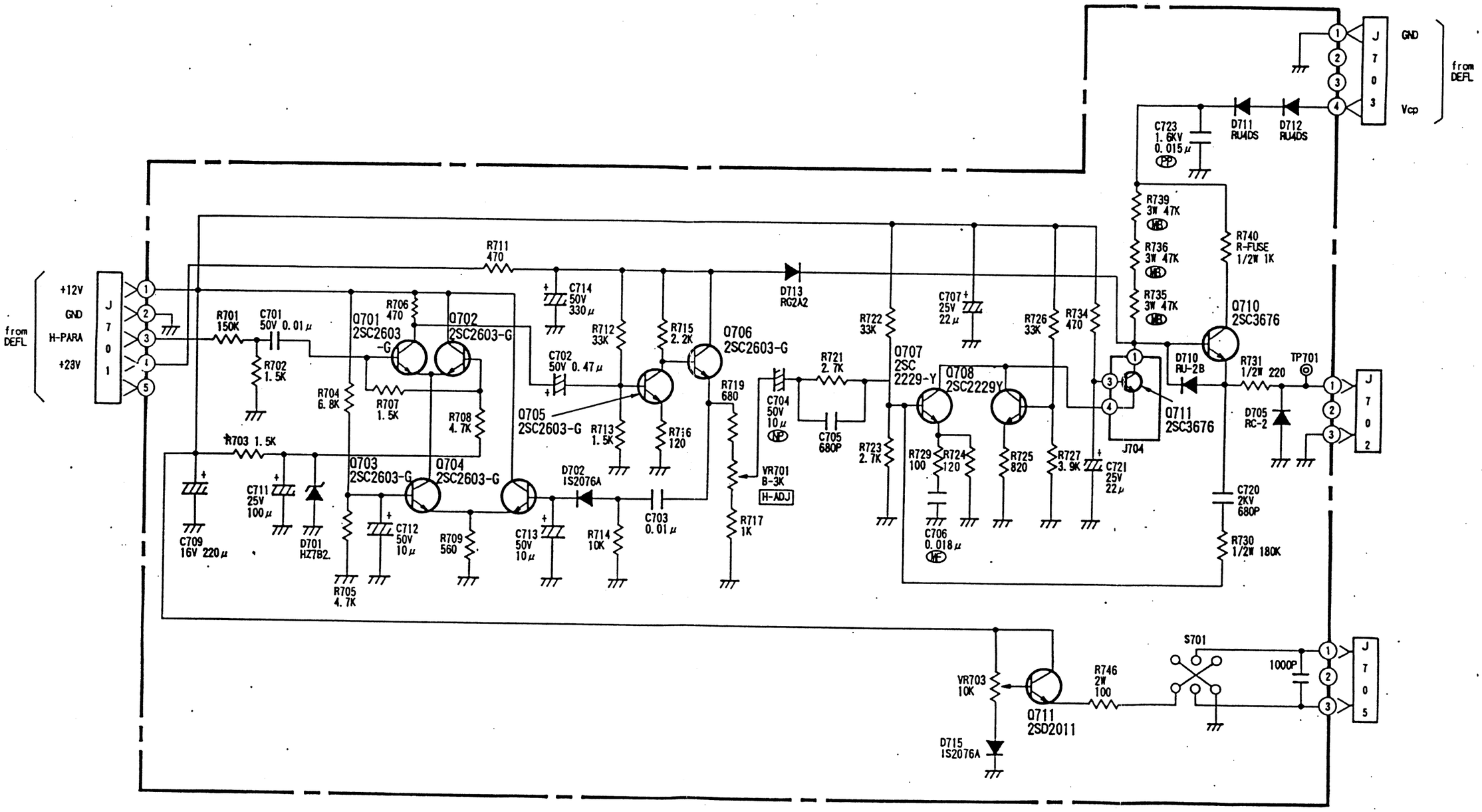
MODEL : HL6945

CRT CIRCUIT



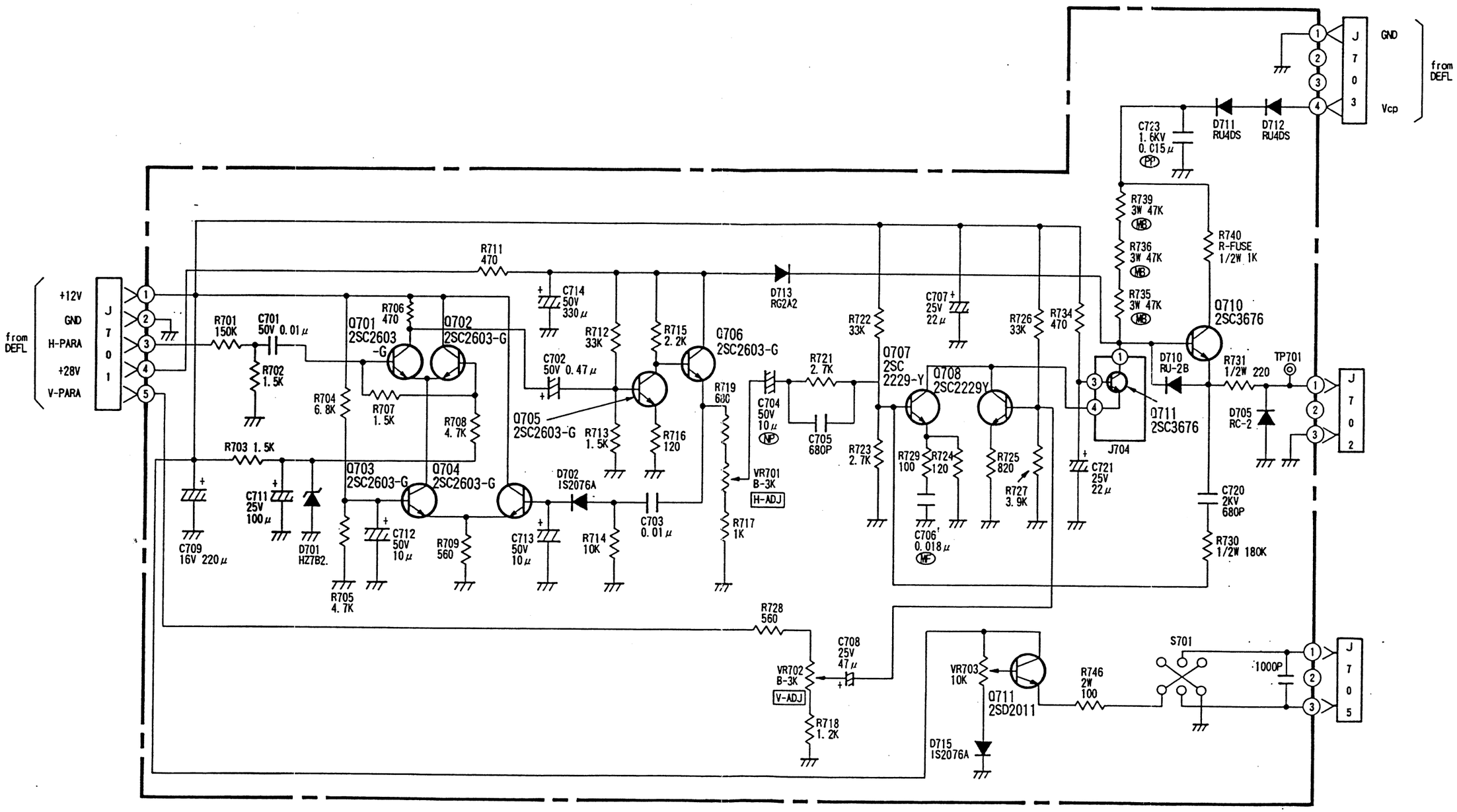
MODEL:HL6955/HL7955

CRT CIRCUIT



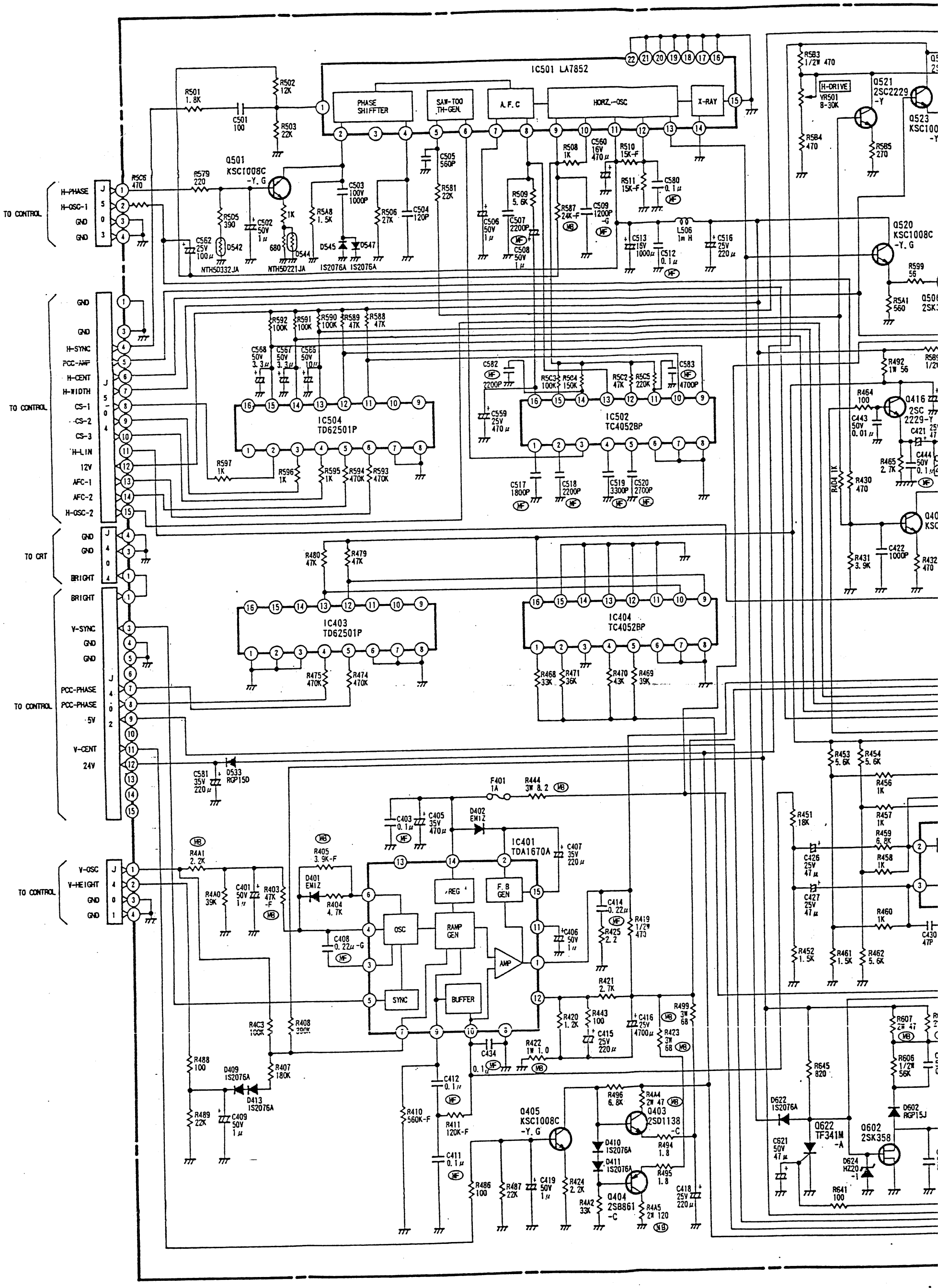
MODEL : HL6945

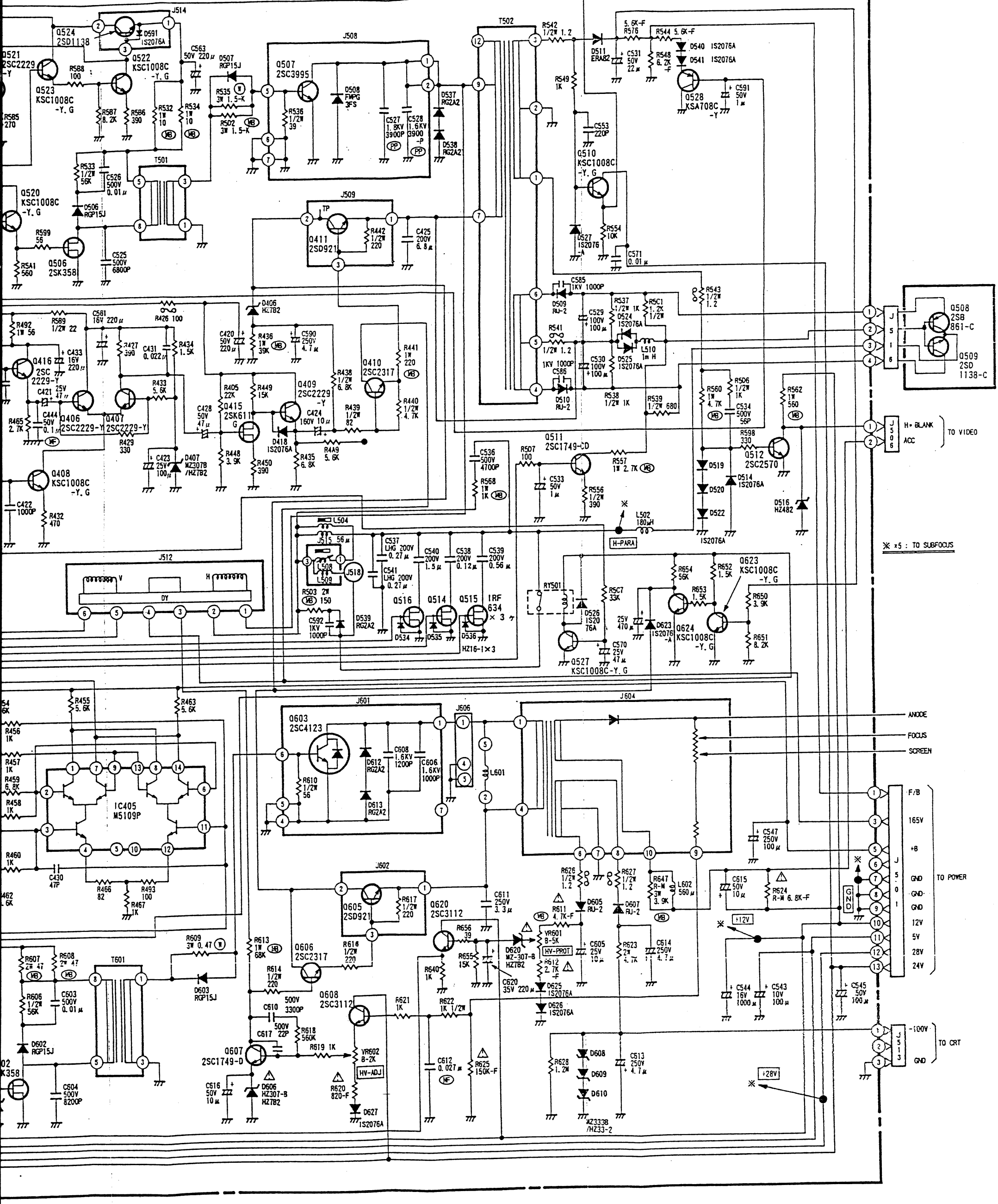
SUB-FOCUS CIRCUIT



MODEL:HL6955/HL7955

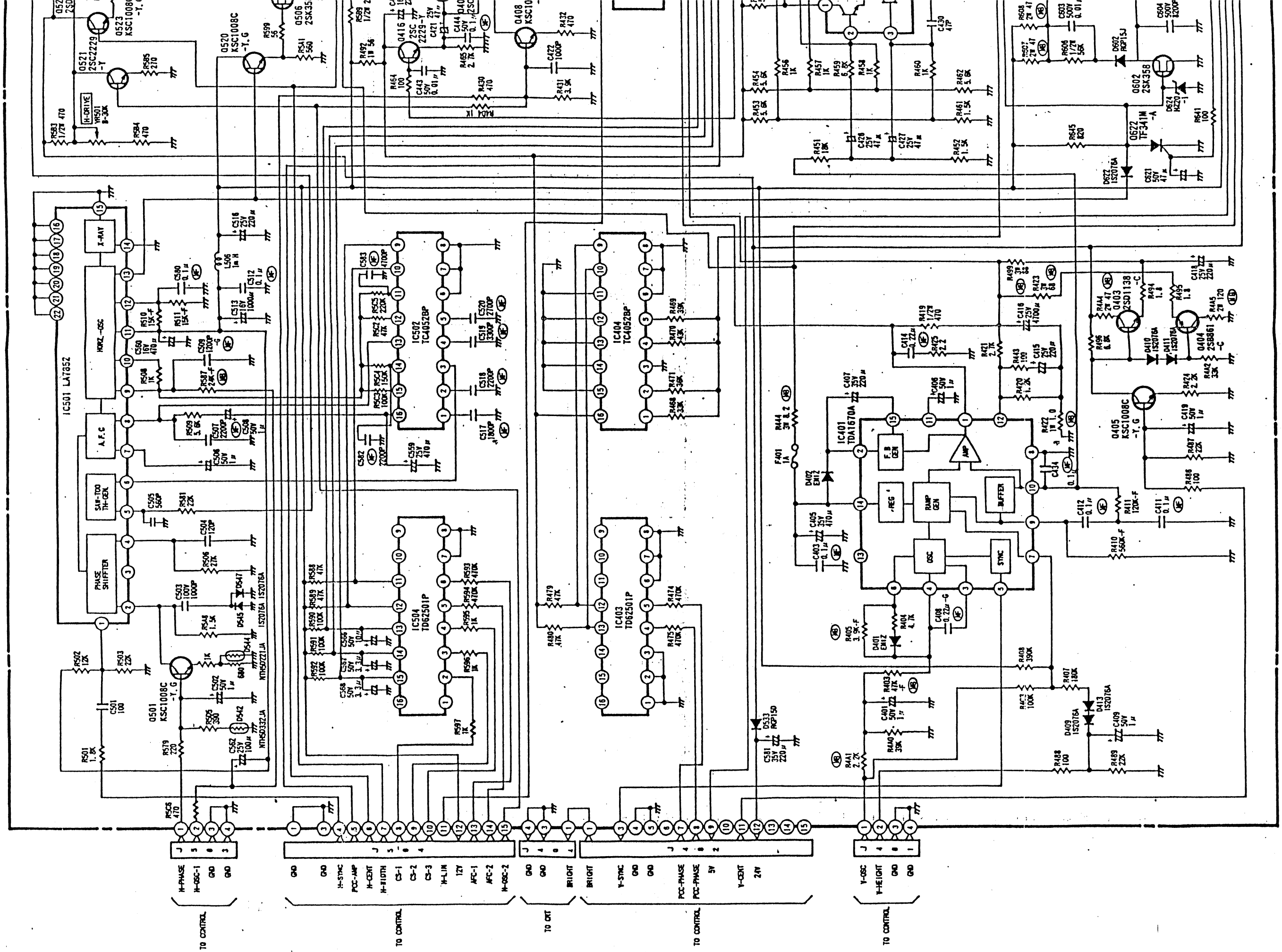
SUB-FOCUS CIRCUIT

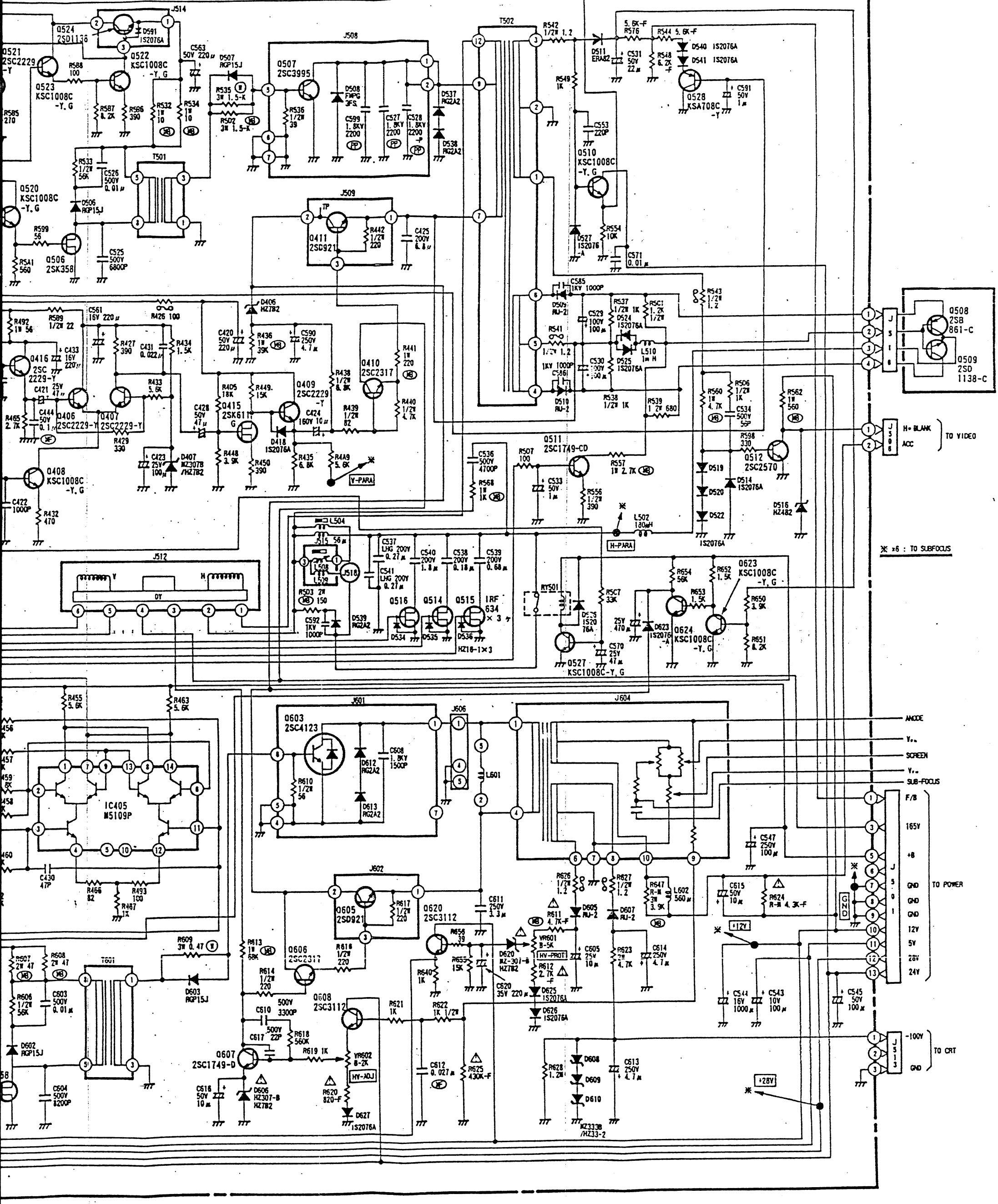

IC501 LA7852
PHASE SHIFFTER
SAW-TOO TH-GEN.
A.F.C
HORZ.-OSC
X-RAY
Q501 KSC1008C -Y.G
Q520 KSC1008C -Y.G
Q521 2SC2229 -Y
Q523 KSC100
IC504 TD62501P
IC502 TC4052BP
IC403 TD62501P
IC404 TC4052BP
IC401 TDA1670A
Q405 KSC1008C -Y.G
Q403 2SD1138 -C
Q404 2SB861 -C
Q416 2SC 2229-Y
Q622 TF341M -A
Q602 2SK358
H-DRIVE
VR501 8-30K
TO CONTROL
TO CRT
H-PHASE
H-OSC-1
GND
H-SYNC
PCC-AFP
H-CENT
H-WIDTH
CS-1
CS-2
CS-3
H-LIN
12V
AFC-1
AFC-2
H-OSC-2
BRIGHT
V-SYNC
PCC-PHASE
5V
V-CENT
24V
V-OSC
V-HEIGHT
OSC
RAMP GEN
SYNC
BUFFER
REG
F.B GEN
AMP
NTH5D332JA
NTH5D221JA
IS2076A
RGP15D
L506 1m H



MODEL:HL6945

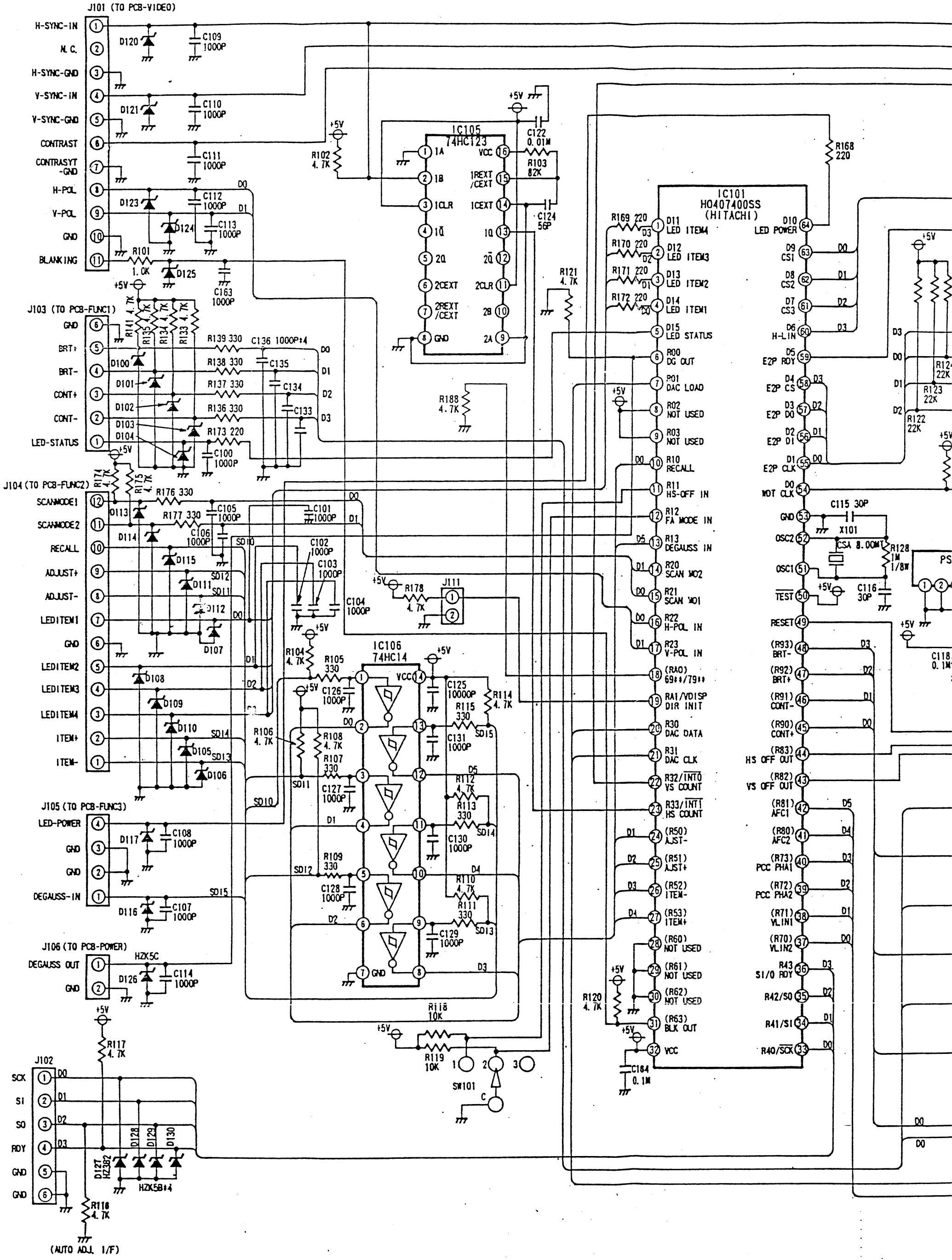
DEFLECTION CIRCUIT

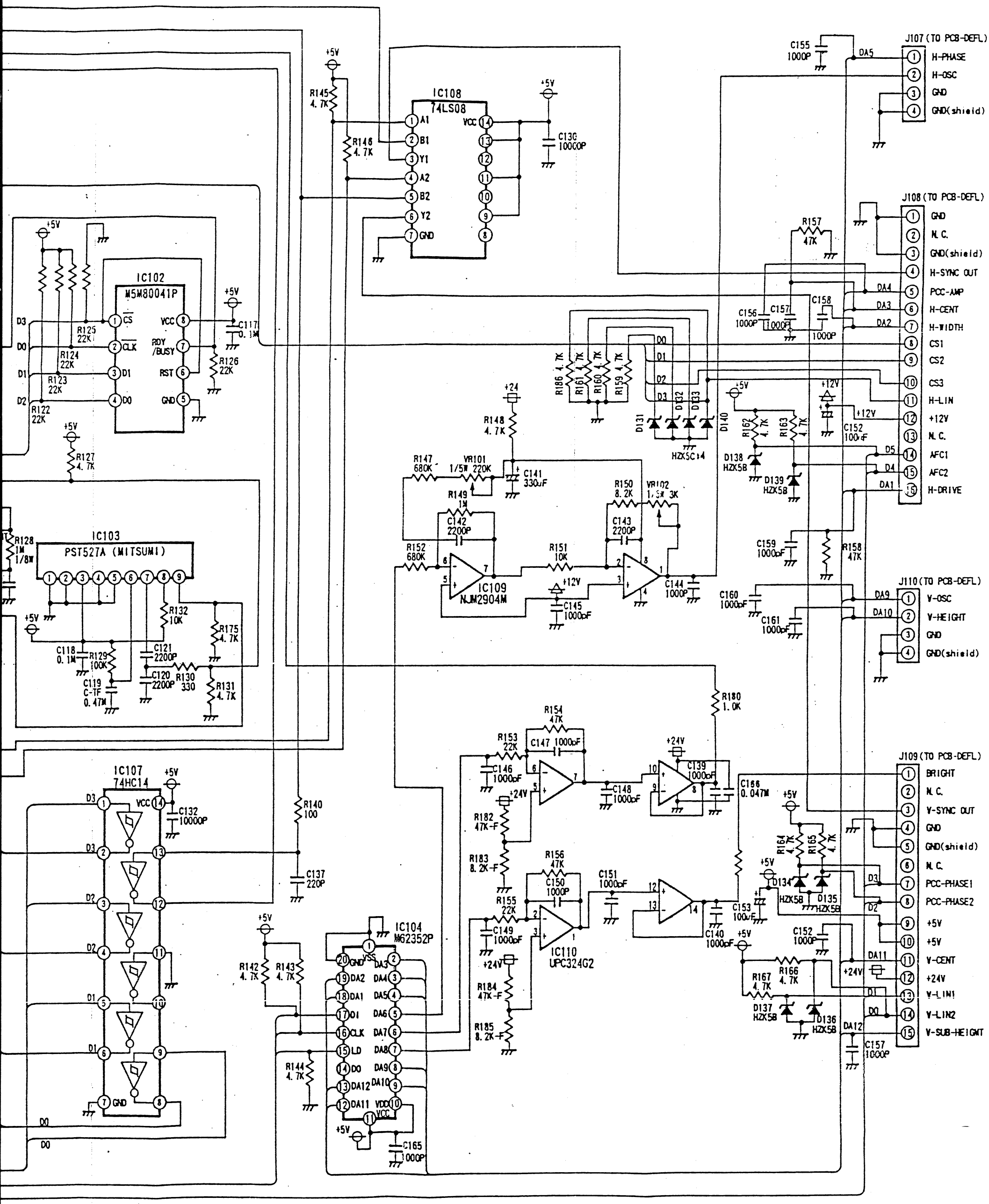

IC501 LA7852
X-RAY
HORZ. OSC
A.F.C
SAW-TOO TH-GEN
PHASE SHIFTER
H-DRIVE
IC502 TC4052BP
IC504 TD62501P
IC404 TC4052BP
IC403 TD62501P
IC401 TDA1670A
F.B GEN
AMP
REG
RAMP GEN
BUFFER
OSC
SYNC
0501 KSC1008C -Y, G
0520 KSC1008C -Y, G
0405 KSC1008C -Y, G
0521 2SC2229 -Y
0523 KSC1008C -Y, G
0506 2SK358
0408 KSC1008C -Y, G
0416 2SC 2229-Y
0602 2SK358
0622 TF341M -A
0403 2SD1138 -C
0404 2SB861 -C
H-PHASE
H-OSC-1
GND
GND
TO CONTROL
GND
GND
H-SYNC
PCC-AMP
H-CENT
H-WIDTH
CS-1
CS-2
CS-3
H-LIN
12V
AFC-1
AFC-2
H-OSC-2
TO CONTROL
GND
GND
BRIGHT
TO CRT
BRIGHT
V-SYNC
GND
GND
PCC-PHASE
PCC-PHASE
5V
V-CENT
24V
TO CONTROL
V-OSC
V-HEIGHT
GND
GND
TO CONTROL



MODEL:HL6955/HL7955

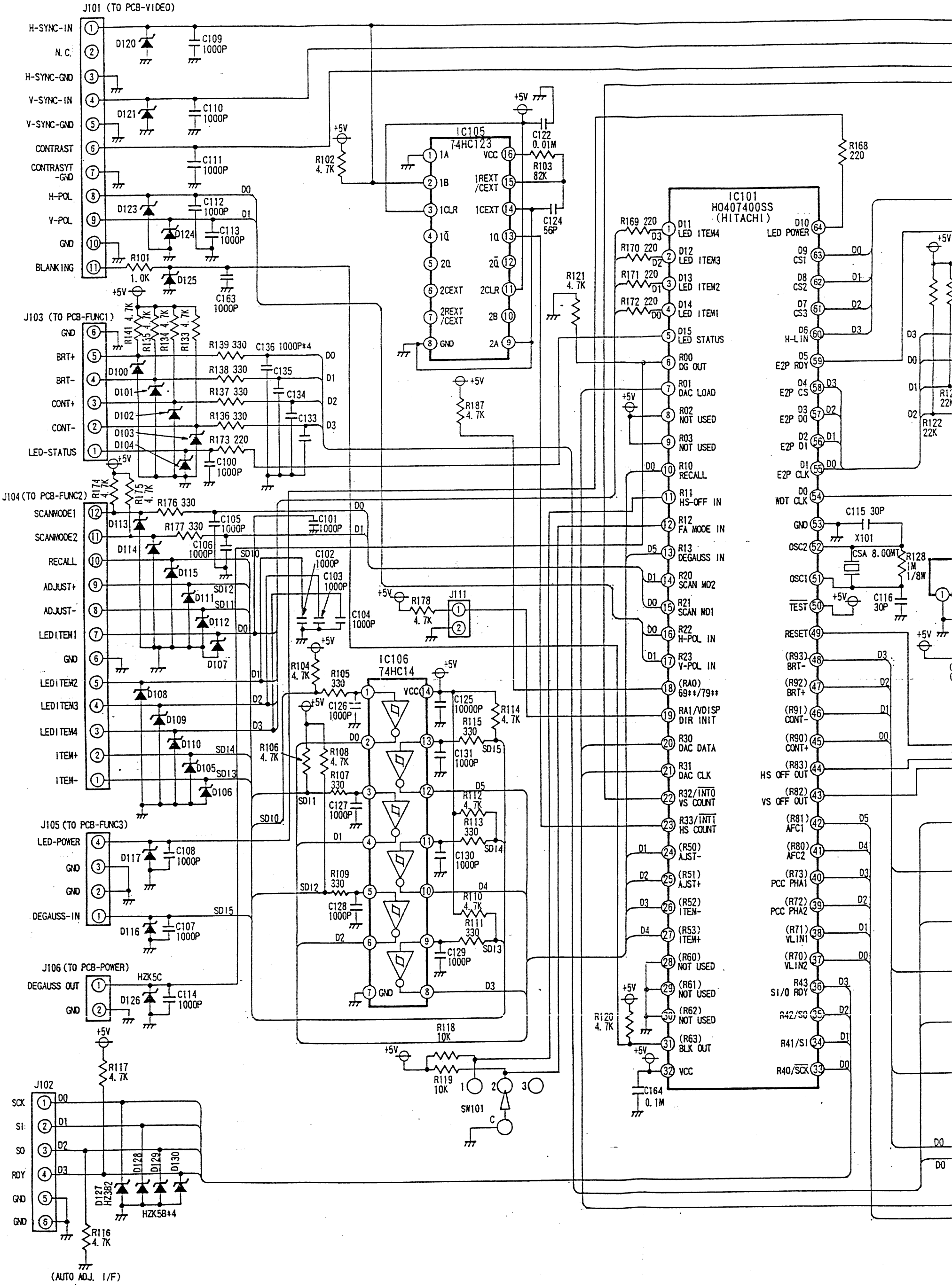
DEFLECTION CIRCUIT

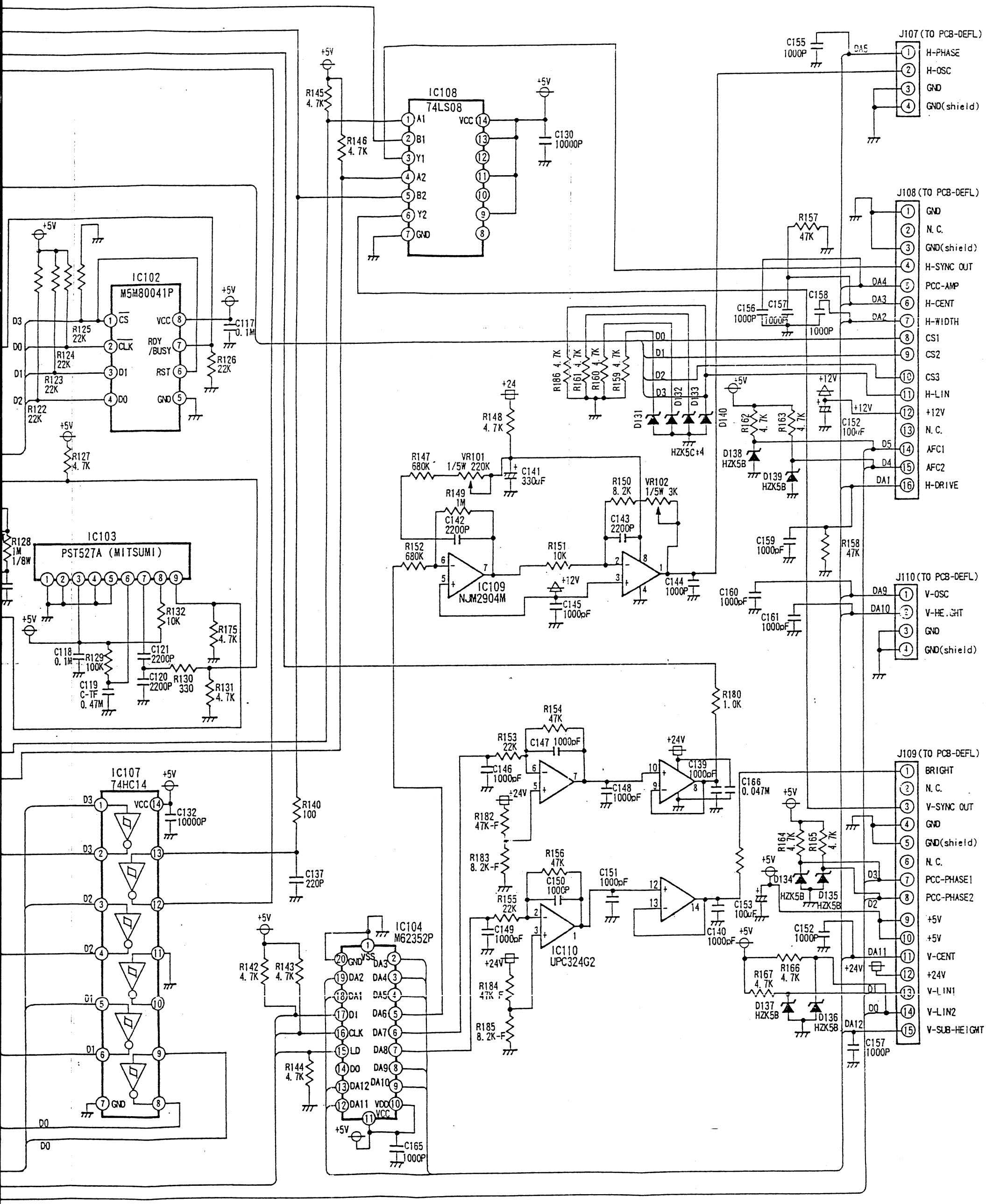

J101 (TO PCB-VIDEO)
H-SYNC-IN
N.C.
H-SYNC-GND
V-SYNC-IN
V-SYNC-GND
CONTRAST
CONTRASYT -GND
H-POL
V-POL
GND
BLANKING
D120
D121
D123
D124
D125
C109 1000P
C110 1000P
C111 1000P
C112 1000P
C113 1000P
C163 1000P
R101 1.0K
+5V
R102 4.7K
IC105 74HC123
1A
1B
1CLR
1Q
2Q
2CEXT
2REXT /CEXT
GND
VCC
1REXT /CEXT
1CEXT
2CLR
2B
2A
C122 0.01M
R103 82K
C124 56P
R121 4.7K
R188 4.7K
IC101 HO407400SS (HITACHI)
R169 220
R170 220
R171 220
R172 220
D11 LED ITEM4
D12 LED ITEM3
D13 LED ITEM2
D14 LED ITEM1
D15 LED STATUS
R00 DG OUT
R01 DAC LOAD
R02 NOT USED
R03 NOT USED
R10 RECALL
R11 HS-OFF IN
R12 FA MODE IN
R13 DEGAUSS IN
R20 SCAN MO2
R21 SCAN MO1
R22 H-POL IN
R23 V-POL IN
(RA0) 69##/79##
RA1/VDISP DIR INIT
R30 DAC DATA
R31 DAC CLK
R32/INT0 VS COUNT
R33/INT1 HS COUNT
(R50) AJST-
(R51) AJST+
(R52) ITEM-
(R53) ITEM+
(R60) NOT USED
(R61) NOT USED
(R62) NOT USED
(R63) BLK OUT
VCC
R120 4.7K
C164 0.1M
R168 220
D10 LED POWER
D9 CS1
D8 CS2
D7 CS3
D6 H-LIN
D5 E2P RDY
D4 E2P CS
D3 E2P DO
D2 E2P DI
D1 E2P CLK
D0 MDT CLK
C115 30P
X101
CSA 8.00MT
R128 1M 1/8W
OSC2
OSC1
TEST
C116 30P
RESET
(R93) BRT-
(R92) BRT+
(R91) CONT-
(R90) CONT+
(R83) HS OFF OUT
(R82) VS OFF OUT
(R81) AFC1
(R80) AFC2
(R73) PCC PHA1
(R72) PCC PHA2
(R71) VLIN1
(R70) VLIN2
R43 S1/0 RDY
R42/SO
R41/SI
R40/SCK
R122 22K
R123 22K
R124 22K
J103 (TO PCB-FUNC1)
GND
BRT+
BRT-
CONT+
CONT-
LED-STATUS
R141 4.7K
R135 4.7K
R134 4.7K
R133 4.7K
R139 330
R138 330
R137 330
R136 330
R173 220
C136 1000P*4
C135
C134
C133
C100 1000P
D100
D101
D102
D103
D104
J104 (TO PCB-FUNC2)
R174 4.7K
R175 4.7K
SCANMODE1
SCANMODE2
RECALL
ADJUST+
ADJUST-
LEDITEM1
LEDITEM2
LEDITEM3
LEDITEM4
ITEM+
ITEM-
R176 330
R177 330
C105 1000P
C106 1000P
C101 1000P
C102 1000P
C103 1000P
C104 1000P
D113
D114
D115
D111
D112
D107
D108
D109
D110
D105
D106
SD10
SD11
SD12
SD13
SD14
SD15
R178 4.7K
J111
R104 4.7K
R105 330
R106 4.7K
R108 4.7K
R107 330
R109 330
R110 4.7K
R111 330
R112 4.7K
R113 330
R114 4.7K
R115 330
C125 10000P
C126 1000P
C127 1000P
C128 1000P
C129 1000P
C130 1000P
C131 1000P
IC106 74HC14
J105 (TO PCB-FUNC3)
LED-POWER
GND
GND
DEGAUSS-IN
D117
D116
C108 1000P
C107 1000P
J106 (TO PCB-POWER)
DEGAUSS OUT
GND
HZK5C
D126
C114 1000P
R118 10K
R119 10K
SW101
J102
SCK
SI
SO
RDY
GND
GND
R117 4.7K
R116 4.7K
D127 HZ3B2
D128
D129
D130
HZK5B*4
(AUTO ADJ. I/F)



MODEL: HL6945/HL6955

CONTROL CIRCUIT


J101 (TO PCB-VIDEO)
H-SYNC-IN
N.C.
H-SYNC-GND
V-SYNC-IN
V-SYNC-GND
CONTRAST
CONTRASYT -GND
H-POL
V-POL
GND
BLANKING
D120
C109 1000P
D121
C110 1000P
C111 1000P
R102 4.7K
D123
C112 1000P
D124
C113 1000P
R101 1.0K
D125
C163 1000P
IC105 74HC123
C122 0.01M
R103 82K
C124 56P
R121 4.7K
R187 4.7K
IC101 HO407400SS (HITACHI)
R168 220
R169 220
R170 220
R171 220
R172 220
D11 LED ITEM4
D12 LED ITEM3
D13 LED ITEM2
D14 LED ITEM1
D15 LED STATUS
R00 DG OUT
R01 DAC LOAD
R02 NOT USED
R03 NOT USED
R10 RECALL
R11 HS-OFF IN
R12 FA MODE IN
R13 DEGAUSS IN
R20 SCAN MD2
R21 SCAN MD1
R22 H-POL IN
R23 V-POL IN
(RA0) 69**/79**
RA1/VDISP DIR INIT
R30 DAC DATA
R31 DAC CLK
R32/INT0 VS COUNT
R33/INT1 HS COUNT
(R50) AJST-
(R51) AJST+
(R52) ITEM-
(R53) ITEM+
(R60) NOT USED
(R61) NOT USED
(R62) NOT USED
(R63) BLK OUT
VCC
C164 0.1M
R120 4.7K
D10 LED POWER
D9 CS1
D8 CS2
D7 CS3
D6 H-LIN
D5 E2P RDY
D4 E2P CS
D3 E2P DO
D2 E2P DI
D1 E2P CLK
D0 WDT CLK
GND
OSC2
OSC1
TEST
RESET
(R93) BRT-
(R92) BRT+
(R91) CONT-
(R90) CONT+
(R83) HS OFF OUT
(R82) VS OFF OUT
(R81) AFC1
(R80) AFC2
(R73) PCC PHA1
(R72) PCC PHA2
(R71) VLIN1
(R70) VLIN2
R43 SI/O RDY
R42/SO
R41/SI
R40/SCK
X101
CSA 8.00MT
R128 1M 1/8W
C115 30P
C116 30P
R122 22K
J103 (TO PCB-FUNC1)
GND
BRT+
BRT-
CONT+
CONT-
LED-STATUS
R141 4.7K
R135 4.7K
R134 4.7K
R133 4.7K
R139 330
R138 330
R137 330
R136 330
R173 220
C136 1000P*4
C135
C134
C133
C100 1000P
D100
D101
D102
D103
D104
J104 (TO PCB-FUNC2)
SCANMODE1
SCANMODE2
RECALL
ADJUST+
ADJUST-
LED ITEM1
LED ITEM2
LED ITEM3
LED ITEM4
ITEM+
ITEM-
R174 4.7K
R175 4.7K
R176 330
R177 330
C105 1000P
C106 1000P
C101 1000P
C102 1000P
C103 1000P
C104 1000P
D113
D114
D115
D111
D112
D107
D108
D109
D110
D105
D106
R178 4.7K
J111
R104 4.7K
R105 330
C126 1000P
IC106 74HC14
C125 10000P
R114 4.7K
R115 330
C131 1000P
R106 4.7K
R108 4.7K
R107 330
C127 1000P
R112 4.7K
R113 330
C130 1000P
R109 330
C128 1000P
R110 4.7K
R111 330
C129 1000P
R118 10K
R119 10K
SW101
J105 (TO PCB-FUNC3)
LED-POWER
GND
GND
DEGAUSS-IN
D117
C108 1000P
D116
C107 1000P
J106 (TO PCB-POWER)
DEGAUSS OUT
GND
HZK5C
D126
C114 1000P
R117 4.7K
J102
SCK
SI
SO
RDY
GND
GND
D127 HZ3B2
D128
D129
D130
HZK5B*4
R116 4.7K
(AUTO ADJ. I/F)



MODEL:HL7955

CONTROL CIRCUIT

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6945KL

ISSUI
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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
1		PICTURE TUBE MODEL : HL6945ETKL		AT20A9SPB22−E
2	Q951	TRANSISTOR	2SC3310	CP260P04302
3	Q388, 389	TRANSISTOR	2SC2705−O	CP260P06803
4	Q387	TRANSISTOR	2SA1145−O	CP260P06804
5	Q953, 954	TRANSISTOR	2SC3332−S	CP260P07302
6	Q514, 515, 516	FET	IRF634	CP260P07801
7	Q201, 231, 261	FET	2SK360−E	CP260P09102
8	Q202, 232, 262	TRANSISTOR	2SC3513	CP260P09201
9	Q907	FET	2SK611	CP260P11801
10	Q303, 401, 402	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q405, 407, 408	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q417, 501, 510	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q520, 522, 523	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q527, 623, 624	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q955	TRANSISTOR	KSC1008C−Y, G	CP260P13606
11	Q418	TRANSISTOR	KSA708C−Y	CP260P13706

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6945KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
12	Q507	TRANSISTOR	2SC3995	CP260P14701
13	Q415	FET	2SK301－Q	CP260P50301
14	Q603	TRANSISTOR	2SC4123	CP260P50601
15	Q952	TRANSISTOR	2SA1408－O	CP261P01302
16	Q905	TRIAC	TM1661S－L	CP261P02102
17	Q701, 702, 703	TRANSISTOR	2SC2603－G	QX260C33805
	Q704, 705, 706	TRANSISTOR	2SC2603－G	QX260C33805
18	Q906	TRANSISTOR	2SC2274－F	QX260C41603
19	Q511, 607	TRANSISTOR	2SC1749C, D / 2SC1749E / 2SC4544	RX260P35202
20	Q384	TRANSISTOR	2SA949－Y	RX270P51002
21	Q406, 409, 416	TRANSISTOR	2SC2229－Y	RX270P51102
	Q521, 707, 708	TRANSISTOR	2SC2229－Y	RX270P51102
22	Q410, 606	TRANSISTOR	2SC2317	RX270P51201
23	Q204, 234, 264	TRANSISTOR	2SC2347	RX270P52301
	Q302	TRANSISTOR	2SC2347	RX270P52301
24	Q301	TRANSISTOR	2SA781－K	RX270P52401
25	Q403, 509, 524	TRANSISTOR	2SD1138－C	RX270P52901
26	Q404, 508	TRANSISTOR	2SB861－C	RX270P53001
27	Q506, 602	FET	2SK358	RX270P54901
28	Q411, 605	TRANSISTOR	2SD921	RX270P55901

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6945KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
29	Q608, 620	TRANSISTOR	2SC2603－G	RX270P56308
30	Q512	TRANSISTOR	2SC2570A	RX270P56901
31	Q381, 383	TRANSISTOR	2SC3502－E, F	RX270P57906
32	Q382	TRANSISTOR	2SA1380－E	RX270P58003
33	Q710, 711, 904	TRANSISTOR	2SC3676	RX270P60601
34	IC404, 502	INTEGRATED CIRCUIT	TC4052BP / MC14052BCP	CP263P02003
35	IC503	INTEGRATED CIRCUIT	M5223P	CP263P02201
36	IC403, 504	INTEGRATED CIRCUIT	TD62501P	CP263P02301
37	IC301	INTEGRATED CIRCUIT	M52001	CP263P02701
38	IC109	INTEGRATED CIRCUIT	NJM2904M	CP263P03201
39	IC501	INTEGRATED CIRCUIT	LA7852	CP266P01401
40	IC952	REGULATER	MPC7805HF / L7805ML / M5F7805L	CP266P05001
41	IC953	REGULATER	MPC7824HF / L7824ML / M5F7824L	CP266P05006
42	IC103	INTEGRATED CIRCUIT	PST527A	CP266P08801
43	IC106, 107	INTEGRATED CIRCUIT	74HC14	CP266P09201
44	IC105	INTEGRATED CIRCUIT	74HC123	CP266P09202
45	IC108	INTEGRATED CIRCUIT	74LS08	CP266P09301
46	IC110	INTEGRATED CIRCUIT	MPC324G2	CP266P09401
47	IC102	INTEGRATED CIRCUIT	M6M80041P	CP266P09504

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
48	IC104	INTEGRATED CIRCUIT	M62352P	CP266P09701
49	IC101	INTEGRATED CIRCUIT	HD614089SC67 (WITH CERAMIC RESONATOR)	CP266P07204
50	IC951	REGULATOR	S1−3122V	CP267P00401
51	IC203, 233, 263	INTAGRTED CIRCUIT	VPA−12	CP267P01901
52	IC901	INTAGRTED CIRCUIT	STR−81145A	CP267P02202
53	IC991	INTAGRTED CIRCUIT	STR−S5841	CP267P02301
54	IC405	INTAGRTED CIRCUIT	M5109P	RX266P75201
55	IC302	INTAGRTED CIRCUIT	M74LS32P / SN74LS32N	RX266P87801
56	IC303	INTAGRTED CIRCUIT	HA17805P / MC7805CT	RX277P51902
57	IC201, 231, 261	INTAGRTED CIRCUIT	M51399P	RX277P60301
58	IC401	INTAGRTED CIRCUIT	TDA1670	RX277P61801
59	IC202, 232, 262	INTAGRTED CIRCUIT	TL431CLPB	RX277P65001
60	D506, 507, 602	DIODE	F114F / RGP15J	CP264D00301
	D603	DIODE	F114F / RGP15J	CP264D00301
61	D533	DIODE	F114B / RGP15D	CP264D00302
62	D905, 957, 958	DIODE	EU1Z	CP264P00902
63	D951, 952, 954	DIODE	RU3AM	CP264P01502
	D959	DIODE	RU3AM	CP264P01502

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
89	D381, 384	DIODE	1S2076A / 1S2471	QX264P04508
90	D409, 410, 411	DIODE	1S2076A	QX264P04502
	D413, 415, 416	DIODE	1S2076A	QX264P04502
	D417, 418, 514	DIODE	1S2076A	QX264P04502
	D519, 520, 521	DIODE	1S2076A	QX264P04502
	D522, 524, 525	DIODE	1S2076A	QX264P04502
	D526, 527, 530	DIODE	1S2076A	QX264P04502
	D531, 532, 591	DIODE	1S2076A	QX264P04502
	D622, 623, 625	DIODE	1S2076A	QX264P04502
	D626, 627, 961	DIODE	1S2076A	QX264P04502
91	D382, 943	DIODE	RM－1B	QX264P10105
92	D940, 941	DIODE	RM－1C	QX264P10106
93	D302	DIODE	MZ305B / EQA02－05CDB	QX264P19303
94	D206, 236, 266	DIODE	MZ312B / EQA02－11CDB	QX264P19306
95	D205, 207, 235	DIODE	RC－2	QX264P20901
	D237, 265, 267	DIODE	RC－2	QX264P20901
	D705	DIODE	RC－2	QX264P20901
96	D702	DIODE	1S2076ARG	RX264P04509
97	D304, 509, 510	DIODE	RU2	RX264P19601
	D511, 605, 607	DIODE	RU2	RX264P19601

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6945KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
98	T502	TRANSFORMER	H−OSC.	CP332D00102
99	T602	TRANSFORMER	FLYBACK	CP334P02301
100	T501, 601	TRANSFORMER	H−DRIVE	CP336P00701
101	T951	TRANSFORMER	CHOPPER	CP350P02001
102	T931	TRANSFORMER	POWER	CP350P03001
103	L953	COIL	CHOKE 2MH 1A	CP321D00201
104	L507, 509	COIL	CHOKE	CP321P01302
105	L956	COIL	CHOKE 22MH 1A	CP321P01501
106	L504	COIL	HORIZONTAL LINEARITY	CP333P00701
107	L508	COIL	LINEARITY	CP333P00801
108	L901, 902	COIL	LINE FILTER	CP351P01803
109		COIL	DEGAUSSING	CP409B01003
110	L601	TRANS−CHOKE		CP409D00102
111	L201, 231, 261	FERRITE		CP410P00201
112		CORE−FERRITE	RISC−6−F	CP410P00303
113	L602	COIL	RF	QX321C01304
114	L954	COIL	FILTER 100MHK	QX409P00602
115	L301, 302, 303	COIL	FILTER 27MHK	QX409P00603
	L951, 952, 955	COIL	FILTER 27MHK	QX409P00603

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RECUMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6945KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
116	L506, 509	COIL	PEAKING 1000MH−K	RX325D02902
117	L205, 206, 235	COIL	INDUCTOR 0.22MH 20%	RX409C52501
	L236, 265, 266	COIL	INDUCTOR 0.22MH 20%	RX409C52501
118	L502	COIL	FILTER 180MH−K	RX409P01706
119	VR201, 231, 261	VARIABLE RESISTOR	SEMIFIXED 1/10W B−200	CP127C00102
120	VR501	VARIABLE RESISTOR	SEMIFIXED 1/10W B−10K	CP127C00109
121	VR301	VARIABLE RESISTOR	SEMIFIXED 1/10W B−50K	CP127C00202
122	VR102	VARIABLE RESISTOR	SEMIFIXED 1/5W B−3K	CP127C02107
123	VR101	VARIABLE RESISTOR	SEMIFIXED 1/5W B−200K	CP127C02204
124	VR701	VARIABLE RESISTOR	SEMIFIXED 1/10W B−3K	CP129C50107
125	VR202, 232, 262	VARIABLE RESISTOR	SEMIFIXED 1/01W B−50K	CP129C50202
126	VR381	VARIABLE RESISTOR	SEMIFIXED 1/5W B100K ± 25%	QX127C03102
127	VR602	VARIABLE RESISTOR	SEMIFIXED 1/2W B−2K	RX129C50706
128	VR601	VARIABLE RESISTOR	SEMIFIXED 1/2W B−5K	RX129C50708
129	R910, 911	RESISTOR	CERAMIC WIRE 5W 0.27−K	CP102P00108
130	R221, 251, 281	RESISTOR	METAL 1/2W 20K−F	CP103C22301
131	R405	RESISTOR	METAL−S 1/4W 3.9K−F	CP103P06603
132	R510, 511	RESISTOR	METAL−S 1/4W 15K−F	CP103P06707

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
133	R4A1	RESISTOR	METAL−S 1/4W 22K−F	CP103P06801
134	R587	RESISTOR	METAL−S 1/4W 24K−F	CP103P06802
135	R924	RESISTOR	METAL−S 1/4W 30K−F	CP103P06804
136	R4A0	RESISTOR	METAL−S 1/4W 33K−F	CP103P06805
137	R403	RESISTOR	METAL−S 1/4W 75K−F	CP103P06904
138	R4C2	RESISTOR	METAL−S 1/4W 150K−F	CP103P07005
139	R186	RESISTOR	CARBON 1/10W 4.7K−F	CP103P11306
140	R183, 185	RESISTOR	CARBON 1/10W 8.2K−F	CP103P11309
141	R182, 184	RESISTOR	CARBON 1/10W 47K−F	CP103P11408
142	R985	RESISTOR	CEMENT WIRE 5W 0.68−K	CP109D00306
143	R912, 913	RESISTOR	CEMENT WIRE 5W 0.27−K	CP109D00307
144	R620	RESISTOR	METAL 1/4W 820−F	QX103P30203
145	R206, 236, 266	RESISTOR	METAL 1/4W 2.7K−F	QX103P30305
	R612	RESISTOR	METAL 1/4W 2.7K−F	QX103P30305
146	R611	RESISTOR	METAL 1/4W 4.7K−F	QX103P30401
147	R624	RESISTOR	METAL 1/4W 5.1K−F	QX103P30402
148	R907	RESISTOR	METAL 1/4W 11K−F	QX103P30500
149	R304, 308	RESISTOR	METAL 1/4W 20K−F	QX103P30506
150	R307, 324	RESISTOR	METAL 1/4W 30K−F	QX103P30600
151	R579	RESISTOR	METAL 1/4W 56K−F	QX103P30607

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
152	R306	RESISTOR METAL 1/4W 68K−F	QX103P30609
153	R303	RESISTOR METAL 14W 100K−F	QX103P30703
154	R408, 490	RESISTOR METAL 1/4W 180K−F	QX103P30709
155	R4A6	RESISTOR METAL 1/4W 220K−F	QX103P30801
156	R4A7	RESISTOR METAL 1/4W 330K−F	QX103P30805
157	R625	RESISTOR METAL 1/4W 430K−F	QX103P30808
158	R409	RESISTOR METAL 1/4W 470K−F	QX103P30809
159	R903, 946	RESISTOR FUSE 1/4W 10−J	QX103P37001
160	R385, 386	RESISTOR FUSE 1/4W 220−J	QX103P37107
161	R3B3	RESISTOR FUSE 1/4W 2.2−J	QX103P37804
162	R740	RESISTOR FUSE 1/2W 1.0K−J	QX103P39205
163	R426	RESISTOR FUSE 1/4W 100−J	QX109P05201
164	R901	RESISTOR FUSE 1/4W 1.2−J	QX109P05204
165	R328	RESISTOR METAL 1/4W 3.32K−F	RX103C09501
166	R329	RESISTOR METAL 1/4W 4.64K−F	RX103C09605
167	R541, 542, 543	RESISTOR FUSE 1/2W 1.2−K	RX109P01305
	R626, 627	RESISTOR FUSE 1/2W 1.2−K	RX109P01305
168	C961	CAPACITOR ELECTROLYTIC 50V 470M	CP181P06508
169	C979	CAPACITOR ELECTROLYTIC 250V 2.2M	CP181P11001

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
170	C901, 902	CAPACITOR ELECTROLYTIC 250V 680MF	CP185P00702
171	C590	CAPACITOR ELECTROLYTIC 4W 250V 4.7M	QX181P10807
172	C547	CAPACITOR ELECTROLYTIC 4W 250V 100M−M/Q	QX181P19404
173	C543	CAPACITOR ELECTROLYTIC 4W 10V 100M−M	QX181P20104
174	C951, 952	CAPACITOR ELECTROLYTIC 4W 10V 1000M−M	QX181P20108
175	C561	CAPACITOR ELECTROLYTIC 4W 16V 220M−M	QX181P20205
176	C560	CAPACITOR ELECTROLYTIC 4W 16V 470M−M	QX181P20207
177	C544	CAPACITOR ELECTROLYTIC 4W 16V 1000M−M	QX181P20208
178	C564	CAPACITOR ELECTROLYTIC 4W 25V 22M−M	QX181P20301
179	C570	CAPACITOR ELECTROLYTIC 4W 25V 47M−M	QX181P20303
180	C562	CAPACITOR ELECTROLYTIC 4W 25V 100M−M	QX181P20304
181	C516	CAPACITOR ELECTROLYTIC 4W 25V 220M−M	QX181P20305
182	C559	CAPACITOR ELECTROLYTIC 4W 25V 470M−M	QX181P20307
183	C956	CAPACITOR ELECTROLYTIC 4W 25V 1000M−M	QX181P20308
184	C954	CAPACITOR ELECTROLYTIC 4W 25V 2200M−M	QX181P20309
185	C581	CAPACITOR ELECTROLYTIC 4W 35V 220M−M	QX181P20407
186	C962	CAPACITOR ELECTROLYTIC 4W 35V 470M−M	QX181P20409
187	C502, 506, 508	CAPACITOR ELECTROLYTIC 4W 50V 1M−M	QX181P20501
	C532, 533	CAPACITOR ELECTROLYTIC 4W 50V 1M−M	QX181P20501
188	C567, 568	CAPACITOR ELECTROLYTIC 4W 50V 3.3M−M	QX181P20503

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
189	C566	CAPACITOR ELECTROLYTIC	4W 50V 10M－M	QX181P20505
190	C531	CAPACITOR ELECTROLYTIC	4W 50V 22M－M	QX181P20506
191	C515, 591	CAPACITOR ELECTROLYTIC	4W 50V 47M－M	QX181P20508
192	C545	CAPACITOR ELECTROLYTIC	4W 50V 100M－M	QX181P20509
193	C563	CAPACITOR ELECTROLYTIC	4W 50V 220M－M	QX181P20600
194	C965, 966	CAPACITOR ELECTROLYTIC	H180V 220M－Q	QX185D05201
195	C529, 530, 973	CAPACITOR ELECTROLYTIC	100V 100MF	RX189D55904
	C974		100V 100MF	RX189D55904
196	C513	CAPACITOR ELECTROLYTIC	16V 1000MF	RX189D55905
197	AG291, 292, 293	SURGE ABSORBER	DSP－301N	CP252P00101
	AG381, 382	SURGE ABSORBER	DSP－301N	CP252P00101
198	AG383	SURGE ABSORBER	DSA－152MB	RX252C50205
199	TH902	THERMISTOR	NTH18D8R0LB	CP265P00402
200	TH901	THERMISTOR	NTH13D160LB	CP265P00404
201	RP902	POSISTOR	PTH451A12BD180M290	CP265P01303
202	RP901	POSISTOR	PTH451A10BG5R0Q140	CP265P02601
203	Q622	THYRISTOR	TF341M－A	CP269P00301
204	RY902	RELAY－POWER	VS 12MB－VD3	CP287C00101
205	RY501	RELAY	JY 12H－K	CP287P00301

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
206	RY901	RELAY	VS 100TBU−VD3	CP287P00701
207	X101	CERAMIC RESONATOR	CSA4.00MG	CP296P00102
208	F401	FUSE	SSFR−FUSE 1A	CP283P00104
209	F951	FUSE	SSFR−FUSE 3A	CP283P00105
210	SW201, 231, 261	SW−SLIDE	ESD−14540	CP431C00801
	SW301	SW−SLIDE	ESD−14540	CP431C00801
211	SW1Y1	SW−SLIDE	ESD−14539	CP431P00501
212	SW1X5, 1X6, 1X7	TACT−SW	SKHRPB	CP439P01101
	SW1X8	TACT−SW	SKHRPB	CP439P01101
213	SW1X1, 1X2, 1X3	TACT−SW	SKHHQW	CP439P01203
	SW1X4, 1Y2	TACT−SW	SKHHQW	CP439P01203
214	SW1X9	TACT−SW	SKHHPP	CP439P01204
215	SW101	VR−CHANNEL	BAND−SW	QX129P00709
216		FRONT PANEL		CP720B00302
217		CONTROL PANEL		CP720B00402
218		TILT & SWIVEL STAND		CP720B00501
219		BACK COVER		CP721B00101
220		ASSY PCB DEFL		CT920B18302

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221		ASSY PCB VIDEO	CT920B18402
222		ASSY PCB SUB FOCUS	CT920B18502
223		ASSY PCB CONTROL	CT920B20302
224		ASSY PCB POWER	CT920A07402
225		ASSY PCB CRT	CT920D94002
226		ASSY PCB FUNCTION 1	CT920D93402
227		ASSY PCB FUNCTION 2	CT920D93403
228		ASSY PCB FUNCTION 3	CT920D93404
229		ASSY PCB H-CENT 1	CT920D93405
230		ASSY PCB H-CENT 2	CT920D93406
231		ASSY PCB H-OUT 1	CT920D93407
232		ASSY PCB H-OUT 2	CT920D93409
233		ASSY PCB FBT	CT920D93502
234		ASSY PCB COIL	CT920D93503
235		ASSY PCB DRIVE	CT920D93504
236		ASSY CPB TR	CT920D93505
237		ASSY PCB REG 1	CT920D93506
238		ASSY PCB REG 2	CT920D93507
239		ASSY PCB HV-OUT 1	CT920D93509

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
240		CUSHION (4pcs)	CP803A04401
241		PACKING CASE	CP802B01407
242		ACCESSORY	CP859C04301
		ACCESSORY (FOR AUSTRALIA)	CP859C04402
243		AC POWER CORD	RX245C50801
244		AC POWER CORD	RX245C50901
245		AC POWER CORD (FOR AUSTRALIA)	CP242C10701
246		FUSE T3.15−250V	QX283D02406

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
1		PICTURE TUBE MODEL : HL6955SFKL		AT20G9TZB22 −M−TC211
		PICTURE TUBE MODEL : HL6955SETKL		AT20G9SPB22 −M−TC211
2	Q951	TRANSISTOR	2SC3310	CP260P04302
3	Q388, 389	TRANSISTOR	2SC2705−O	CP260P06803
4	Q387	TRANSISTOR	2SA1145−O	CP260P06804
5	Q953, 954	TRANSISTOR	2SC3332−S	CP260P07302
6	Q514, 515, 516	FET	IRF634	CP260P07801
7	Q201, 231, 261	FET	2SK360−E	CP260P09102
8	Q202, 232, 262	TRANSISTOR	2SC3513	CP260P09201
9	Q907	FET	2SK611	CP260P11801
10	Q303, 401, 402	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q405, 407, 408	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q417, 501, 510	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q520, 522, 523	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q527, 623, 624	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q955	TRANSISTOR	KSC1008C−Y, G	CP260P13606
11	Q418	TRANSISTOR	KSA708C−Y	CP260P13706

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
12	Q507	TRANSISTOR	2SC3995	CP260P14701
13	Q415	FET	2SK301−Q	CP260P50301
14	Q603	TRANSISTOR	2SC4123	CP260P50601
15	Q952	TRANSISTOR	2SA1408−O	CP261P01302
16	Q905	TRIAC	TM1661S−L	CP261P02102
17	Q701, 702, 703	TRANSISTOR	2SC2603−G	QX260C33805
	Q704, 705, 706	TRANSISTOR	2SC2603−G	QX260C33805
18	Q906	TRANSISTOR	2SC2274−F	QX260C41603
19	Q511, 607	TRANSISTOR	2SC1749C, D / 2SC1749E / 2SC4544	RX260P35202
20	Q384	TRANSISTOR	2SA949−Y	RX270P51002
21	Q406, 409, 416	TRANSISTOR	2SC2229−Y	RX270P51102
	Q521, 707, 708	TRANSISTOR	2SC2229−Y	RX270P51102
22	Q410, 606	TRANSISTOR	2SC2317	RX270P51201
23	Q204, 234, 264	TRANSISTOR	2SC2347	RX270P52301
	Q302	TRANSISTOR	2SC2347	RX270P52301
24	Q301	TRANSISTOR	2SA781−K	RX270P52401
25	Q403, 509, 524	TRANSISTOR	2SD1138−C	RX270P52901
26	Q404, 508	TRANSISTOR	2SB861−C	RX270P53001
27	Q506, 602	FET	2SK358	RX270P54901
28	Q411, 605	TRANSISTOR	2SD921	RX270P55901

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
29	Q608, 620	TRANSISTOR	2SC2603－G	RX270P56308
30	Q512	TRANSISTOR	2SC2570A	RX270P56901
31	Q381, 383	TRANSISTOR	2SC3502－E, F	RX270P57906
32	Q382	TRANSISTOR	2SA1380－E	RX270P58003
33	Q711, 904	TRANSISTOR	2SC3676	RX270P60601
34	IC404, 502	INTEGRATED CIRCUIT	TC4052BP / MC14052BCP	CP263P02003
35	IC503	INTEGRATED CIRCUIT	M5223P	CP263P02201
36	IC403, 504	INTEGRATED CIRCUIT	TD62501P	CP263P02301
37	IC301	INTEGRATED CIRCUIT	M52001	CP263P02701
38	IC109	INTEGRATED CIRCUIT	NJM2904M	CP263P03201
39	IC501	INTEGRATED CIRCUIT	LA7852	CP266P01401
40	IC952	REGULATER	MPC7805HF / L7805ML / M5F7805L	CP266P05001
41	IC953	REGULATER	MPC7824HF / L7824ML / M5F7824L	CP266P05006
42	IC103	INTEGRATED CIRCUIT	PST527A	CP266P08801
43	IC106, 107	INTEGRATED CIRCUIT	74HC14	CP266P09201
44	IC105	INTEGRATED CIRCUIT	74HC123	CP266P09202
45	IC108	INTEGRATED CIRCUIT	74LS08	CP266P09301
46	IC110	INTEGRATED CIRCUIT	MPC324G2	CP266P09401
47	IC102	INTEGRATED CIRCUIT	M6M80041P	CP266P09504

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
48	IC104	INTEGRATED CIRCUIT	M62352P	CP266P09701
49	IC101	INTEGRATED CIRCUIT	HD614089SC67 (WITH CERAMIC RESONATOR)	CP266P07204
50	IC951	REGULATOR	S1−3122V	CP267P00401
51	IC203, 233, 263	INTAGRTED CIRCUIT	VPA−12	CP267P01901
52	IC901	INTAGRTED CIRCUIT	STR−81145A	CP267P02202
53	IC991	INTAGRTED CIRCUIT	STR−S5841	CP267P02301
54	IC405	INTAGRTED CIRCUIT	M5109P	RX266P75201
55	IC302	INTAGRTED CIRCUIT	M74LS32P / SN74LS32N	RX266P87801
56	IC303	INTAGRTED CIRCUIT	HA17805P / MC7805CT	RX277P51902
57	IC201, 231, 261	INTAGRTED CIRCUIT	M51399P	RX277P60301
58	IC401	INTAGRTED CIRCUIT	TDA1670	RX277P61801
59	IC202, 232, 262	INTAGRTED CIRCUIT	TL431CLPB	RX277P65001
60	D506, 507, 602	DIODE	F114F / RGP15J	CP264D00301
	D603	DIODE	F114F / RGP15J	CP264D00301
61	D533	DIODE	F114B / RGP15D	CP264D00302
62	D905, 957, 958	DIODE	EU1Z	CP264P00902
63	D951, 952, 954	DIODE	RU3AM	CP264P01502
	D959	DIODE	RU3AM	CP264P01502

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
64	D710, 908, 944	DIODE	RU−2B	CP264P01602
65	D1X1, 1X6	LED	SLP−335B−55	CP264P05201
66	D711, 712	DIODE	RU4DS	CP264P05301
67	D967	DIODE	R2KN	CP264P05501
68	D537, 538, 612	DIODE	RG2A2	CP264P05801
	D613, 713	DIODE	RG2A2	CP264P05801
69	D953, 955	DIODE	RU−4AM	CP264P06002
70	D406	DIODE	HZ3B2	CP264P07105
71	D516	DIODE	HZ4B2	CP264P07204
72	D956	DIODE	HZ6C1	CP264P07404
73	D407, 606, 620	DIODE	HZ7B2	CP264P07501
74	D701	DIODE	HZ7B2	CP264P07802
75	D534, 535, 536	DIODE	HZ16−1	CP264P08202
76	D624	DIODE	HZ20−1	CP264P08208
77	D608, 609, 610	DIODE	HZ33−2	CP264P08404
78	D201, 231, 261	DIODE	HZK3BTR LLD	CP264P10104
79	D100, 101, 102	DIODE	HZK5BTR	CP264P10201
	D103, 104, 105	DIODE	HZK5BTR	CP264P10201
	D106, 107, 108	DIODE	HZK5BTR	CP264P10201
	D109, 110, 111	DIODE	HZK5BTR	CP264P10201

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
64	D710, 908, 944	DIODE	RU−2B	CP264P01602
65	D1X1, 1X6	LED	SLP−335B−55	CP264P05201
66	D711, 712	DIODE	RU4DS	CP264P05301
67	D967	DIODE	R2KN	CP264P05501
68	D537, 538, 612	DIODE	RG2A2	CP264P05801
	D613, 713	DIODE	RG2A2	CP264P05801
69	D953, 955	DIODE	RU−4AM	CP264P06002
70	D406	DIODE	HZ3B2	CP264P07105
71	D516	DIODE	HZ4B2	CP264P07204
72	D956	DIODE	HZ6C1	CP264P07404
73	D407, 606, 620	DIODE	HZ7B2	CP264P07501
74	D701	DIODE	HZ7B2	CP264P07802
75	D534, 535, 536	DIODE	HZ16−1	CP264P08202
76	D624	DIODE	HZ20−1	CP264P08208
77	D608, 609, 610	DIODE	HZ33−2	CP264P08404
78	D201, 231, 261	DIODE	HZK3BTR LLD	CP264P10104
79	D100, 101, 102	DIODE	HZK5BTR	CP264P10201
	D103, 104, 105	DIODE	HZK5BTR	CP264P10201
	D106, 107, 108	DIODE	HZK5BTR	CP264P10201
	D109, 110, 111	DIODE	HZK5BTR	CP264P10201

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	D112, 113, 114	DIODE	HZK5BTR	CP264P10201
	D115, 116, 117	DIODE	HZK5BTR	CP264P10201
	D120, 121, 123	DIODE	HZK5BTR	CP264P10201
	D124, 125, 127	DIODE	HZK5BTR	CP264P10201
	D128, 134, 135	DIODE	HZK5BTR	CP264P10201
	D136, 137, 138	DIODE	HZK5BTR	CP264P10201
	D139, 301, 303	DIODE	HZK5BTR	CP264P10201
80	D126, 129, 130	DIODE	HZK5CTR LLD	CP264P10202
	D131, 132, 133	DIODE	HZK5CTR LLD	CP264P10202
	D140	DIODE	HZK5CTR LLD	CP264P10202
81	D202, 203, 232	DIODE	HSK120TR LLD	CP264P10501
	D233, 262, 263	DIODE	HSK120TR LLD	CP264P10501
82	D901	DIODE	RBV−608	CP264P12302
83	D914, 915	DIODE	R4KL−J2	CP264P12701
84	D1X2, 1X3, 1X4	DIODE	LN351GPP	CP264P16601
	D1X5	DIODE	LN351GPP	CP264P16601
85	D902	DIODE	PZ−127	CP264P50501
86	D508	DIODE	FMP−G3FS	CP264P52401
87	D909	DIODE	TVR1G / ES−1	QX264D05601
88	D401, 402	DIODE	S5500−D / EM−1Z / ERB12−02RK	QX264D05602

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
	D112, 113, 114	DIODE	HZK5BTR	CP264P10201
	D115, 116, 117	DIODE	HZK5BTR	CP264P10201
	D120, 121, 123	DIODE	HZK5BTR	CP264P10201
	D124, 125, 127	DIODE	HZK5BTR	CP264P10201
	D128, 134, 135	DIODE	HZK5BTR	CP264P10201
	D136, 137, 138	DIODE	HZK5BTR	CP264P10201
	D139, 301, 303	DIODE	HZK5BTR	CP264P10201
80	D126, 129, 130	DIODE	HZK5CTR LLD	CP264P10202
	D131, 132, 133	DIODE	HZK5CTR LLD	CP264P10202
	D140	DIODE	HZK5CTR LLD	CP264P10202
81	D202, 203, 232	DIODE	HSK120TR LLD	CP264P10501
	D233, 262, 263	DIODE	HSK120TR LLD	CP264P10501
82	D901	DIODE	RBV−608	CP264P12302
83	D914, 915	DIODE	R4KL−J2	CP264P12701
84	D1X2, 1X3, 1X4	DIODE	LN351GPP	CP264P16601
	D1X5	DIODE	LN351GPP	CP264P16601
85	D902	DIODE	PZ−127	CP264P50501
86	D508	DIODE	FMP−G3FS	CP264P52401
87	D909	DIODE	TVR1G / ES−1	QX264D05601
88	D401, 402	DIODE	S5500−D / EM−1Z / ERB12−02RK	QX264D05602

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
89	D381, 384	DIODE	1S2076A / 1S2471	QX264P04508
90	D409, 410, 411	DIODE	1S2076A	QX264P04502
	D413, 415, 416	DIODE	1S2076A	QX264P04502
	D417, 418, 514	DIODE	1S2076A	QX264P04502
	D519, 520, 521	DIODE	1S2076A	QX264P04502
	D522, 524, 525	DIODE	1S2076A	QX264P04502
	D526, 527, 530	DIODE	1S2076A	QX264P04502
	D531, 532, 591	DIODE	1S2076A	QX264P04502
	D622, 623, 625	DIODE	1S2076A	QX264P04502
	D626, 627, 961	DIODE	1S2076A	QX264P04502
91	D382, 943	DIODE	RM－1B	QX264P10105
92	D940, 941	DIODE	RM－1C	QX264P10106
93	D302	DIODE	MZ305B / EQA02－05CDB	QX264P19303
94	D206, 236, 266	DIODE	MZ312B / EQA02－11CDB	QX264P19306
95	D205, 207, 235	DIODE	RC－2	QX264P20901
	D237, 265, 267	DIODE	RC－2	QX264P20901
	D705	DIODE	RC－2	QX264P20901
96	D702	DIODE	1S2076ARG	RX264P04509
97	D304, 509, 510	DIODE	RU2	RX264P19601
	D511, 605, 607	DIODE	RU2	RX264P19601

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6955KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
98	T502	TRANSFORMER	H−OSC.	CP332D00102
99	T602	TRANSFORMER	FLYBACK	CP334P02301
100	T501, 601	TRANSFORMER	H−DRIVE	CP336P00701
101	T951	TRANSFORMER	CHOPPER	CP350P02001
102	T931	TRANSFORMER	POWER	CP350P03001
103	L953	COIL	CHOKE 2MH 1A	CP321D00201
104	L507, 509	COIL	CHOKE	CP321P01302
105	L956	COIL	CHOKE 22MH 1A	CP321P01501
106	L504	COIL	HORIZONTAL LINEARITY	CP333P00701
107	L508	COIL	LINEARITY	CP333P00801
108	L901, 902	COIL	LINE FILTER	CP351P01803
109		COIL	DEGAUSSING	CP409B01003
110	L601	TRANS−CHOKE		CP409D00102
111	L201, 231, 261	FERRITE		CP410P00201
112		CORE−FERRITE	RISC−6−F	CP410P00303
113	L602	COIL	RF	QX321C01304
114	L954	COIL	FILTER 100MHK	QX409P00602
115	L301, 302, 303	COIL	FILTER 27MHK	QX409P00603
	L951, 952, 955	COIL	FILTER 27MHK	QX409P00603

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
116	L506, 509	COIL	PEAKING 1000MH−K	RX325D02902
117	L205, 206, 235	COIL	INDUCTOR 0.22MH 20%	RX409C52501
	L236, 265, 266	COIL	INDUCTOR 0.22MH 20%	RX409C52501
118	L502	COIL	FILTER 180MH−K	RX409P01706
119	VR201, 231, 261	VARIABLE RESISTOR	SEMIFIXED 1/10W B−200	CP127C00102
120	VR501	VARIABLE RESISTOR	SEMIFIXED 1/10W B−10K	CP127C00109
121	VR301	VARIABLE RESISTOR	SEMIFIXED 1/10W B−50K	CP127C00202
122	VR102	VARIABLE RESISTOR	SEMIFIXED 1/5W B−3K	CP127C02107
123	VR101	VARIABLE RESISTOR	SEMIFIXED 1/5W B−200K	CP127C02204
124	VR701, 702	VARIABLE RESISTOR	SEMIFIXED 1/10W B−3K	CP129C50107
125	VR202, 232, 262	VARIABLE RESISTOR	SEMIFIXED 1/01W B−50K	CP129C50202
126	VR381	VARIABLE RESISTOR	SEMIFIXED 1/5W B100K ± 25%	QX127C03102
127	VR602	VARIABLE RESISTOR	SEMIFIXED 1/2W B−2K	RX129C50706
128	VR601	VARIABLE RESISTOR	SEMIFIXED 1/2W B−5K	RX129C50708
129	R910, 911	RESISTOR	CERAMIC WIRE 5W 0.27−K	CP102P00108
130	R221, 251, 281	RESISTOR	METAL 1/2W 20K−F	CP103C22301
131	R405	RESISTOR	METAL−S 1/4W 3.9K−F	CP103P06603
132	R510, 511	RESISTOR	METAL−S 1/4W 15K−F	CP103P06707

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
133	R4A1	RESISTOR	METAL—S 1/4W 22K—F	CP103P06801
134	R587	RESISTOR	METAL—S 1/4W 24K—F	CP103P06802
135	R924	RESISTOR	METAL—S 1/4W 30K—F	CP103P06804
136	R4A0	RESISTOR	METAL—S 1/4W 33K—F	CP103P06805
137	R403	RESISTOR	METAL—S 1/4W 75K—F	CP103P06904
138	R4C2	RESISTOR	METAL—S 1/4W 150K—F	CP103P07005
139	R186	RESISTOR	CARBON 1/10W 4.7K—F	CP103P11306
140	R183, 185	RESISTOR	CARBON 1/10W 8.2K—F	CP103P11309
141	R182, 184	RESISTOR	CARBON 1/10W 47K—F	CP103P11408
142	R985	RESISTOR	CEMENT WIRE 5W 0.68—K	CP109D00306
143	R912, 913	RESISTOR	CEMENT WIRE 5W 0.27—K	CP109D00307
144	R620	RESISTOR	METAL 1/4W 820—F	QX103P30203
145	R206, 236, 266	RESISTOR	METAL 1/4W 2.7K—F	QX103P30305
	R612	RESISTOR	METAL 1/4W 2.7K—F	QX103P30305
146	R611	RESISTOR	METAL 1/4W 4.7K—F	QX103P30401
147	R624	RESISTOR	METAL 1/4W 5.1K—F	QX103P30402
148	R907	RESISTOR	METAL 1/4W 11K—F	QX103P30500
149	R304, 308	RESISTOR	METAL 1/4W 20K—F	QX103P30506
150	R307, 324	RESISTOR	METAL 1/4W 30K—F	QX103P30600
151	R579	RESISTOR	METAL 1/4W 56K—F	QX103P30607

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
152	R306	RESISTOR	METAL 1/4W 68K−F	QX103P30609
153	R303	RESISTOR	METAL 14W 100K−F	QX103P30703
154	R408, 490	RESISTOR	METAL 1/4W 180K−F	QX103P30709
155	R4A6	RESISTOR	METAL 1/4W 220K−F	QX103P30801
156	R4A7	RESISTOR	METAL 1/4W 330K−F	QX103P30805
157	R625	RESISTOR	METAL 1/4W 430K−F	QX103P30808
158	R409	RESISTOR	METAL 1/4W 470K−F	QX103P30809
159	R903, 946	RESISTOR	FUSE 1/4W 10−J	QX103P37001
160	R385, 386	RESISTOR	FUSE 1/4W 220−J	QX103P37107
161	R3B3	RESISTOR	FUSE 1/4W 2.2−J	QX103P37804
162	R740	RESISTOR	FUSE 1/2W 1.0K−J	QX103P39205
163	R426	RESISTOR	FUSE 1/4W 100−J	QX109P05201
164	R901	RESISTOR	FUSE 1/4W 1.2−J	QX109P05204
165	R328	RESISTOR	METAL 1/4W 3.32K−F	RX103C09501
166	R329	RESISTOR	METAL 1/4W 4.64K−F	RX103C09605
167	R541, 542, 543	RESISTOR	FUSE 1/2W 1.2−K	RX109P01305
	R626, 627	RESISTOR	FUSE 1/2W 1.2−K	RX109P01305
168	C961	CAPACITOR ELECTROLYTIC	50V 470M	CP181P06508
169	C979	CAPACITOR ELECTROLYTIC	250V 2.2M	CP181P11001

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
170	C901, 902	CAPACITOR ELECTROLYTIC 250V 680MF	CP185P00702
171	C590	CAPACITOR ELECTROLYTIC 4W 250V 4.7M	QX181P10807
172	C547	CAPACITOR ELECTROLYTIC 4W 250V 100M－M / Q	QX181P19404
173	C543	CAPACITOR ELECTROLYTIC 4W 10V 100M－M	QX181P20104
174	C951, 952	CAPACITOR ELECTROLYTIC 4W 10V 1000M－M	QX181P20108
175	C561	CAPACITOR ELECTROLYTIC 4W 16V 220M－M	QX181P20205
176	C560	CAPACITOR ELECTROLYTIC 4W 16V 470M－M	QX181P20207
177	C544	CAPACITOR ELECTROLYTIC 4W 16V 1000M－M	QX181P20208
178	C564	CAPACITOR ELECTROLYTIC 4W 25V 22M－M	QX181P20301
179	C570	CAPACITOR ELECTROLYTIC 4W 25V 47M－M	QX181P20303
180	C562	CAPACITOR ELECTROLYTIC 4W 25V 100M－M	QX181P20304
181	C516	CAPACITOR ELECTROLYTIC 4W 25V 220M－M	QX181P20305
182	C559	CAPACITOR ELECTROLYTIC 4W 25V 470M－M	QX181P20307
183	C956	CAPACITOR ELECTROLYTIC 4W 25V 1000M－M	QX181P20308
184	C954	CAPACITOR ELECTROLYTIC 4W 25V 2200M－M	QX181P20309
185	C581	CAPACITOR ELECTROLYTIC 4W 35V 220M－M	QX181P20407
186	C962	CAPACITOR ELECTROLYTIC 4W 35V 470M－M	QX181P20409
187	C502, 506, 508	CAPACITOR ELECTROLYTIC 4W 50V 1M－M	QX181P20501
	C532, 533	CAPACITOR ELECTROLYTIC 4W 50V 1M－M	QX181P20501
188	C567, 568	CAPACITOR ELECTROLYTIC 4W 50V 3.3M－M	QX181P20503

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
189	C566	CAPACITOR ELECTROLYTIC	4W 50V 10M−M	QX181P20505
190	C531	CAPACITOR ELECTROLYTIC	4W 50V 22M−M	QX181P20506
191	C515, 591	CAPACITOR ELECTROLYTIC	4W 50V 47M−M	QX181P20508
192	C545	CAPACITOR ELECTROLYTIC	4W 50V 100M−M	QX181P20509
193	C563	CAPACITOR ELECTROLYTIC	4W 50V 220M−M	QX181P20600
194	C965, 966	CAPACITOR ELECTROLYTIC	H180V 220M−Q	QX185D05201
195	C529, 530, 973	CAPACITOR ELECTROLYTIC	100V 100MF	RX189D55904
	C974		100V 100MF	RX189D55904
196	C513	CAPACITOR ELECTROLYTIC	16V 1000MF	RX189D55905
197	AG291, 292, 293	SURGE ABSORBER	DSP−301N	CP252P00101
	AG381, 382	SURGE ABSORBER	DSP−301N	CP252P00101
198	AG383	SURGE ABSORBER	DSA−152MB	RX252C50205
199	TH902	THERMISTOR	NTH18D8R0LB	CP265P00402
200	TH901	THERMISTOR	NTH13D160LB	CP265P00404
201	RP902	POSISTOR	PTH451A12BD180M290	CP265P01303
202	RP901	POSISTOR	PTH451A10BG5R0Q140	CP265P02601
203	Q622	THYRISTOR	TF341M−A	CP269P00301
204	RY902	RELAY−POWER	VS 12MB−VD3	CP287C00101
205	RY501	RELAY	JY 12H−K	CP287P00301

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
206	RY901	RELAY	VS 100TBU−VD3	CP287P00701
207	X101	CERAMIC RESONATOR	CSA4.00MG	CP296P00102
208	F401	FUSE	SSFR−FUSE 1A	CP283P00104
209	F951	FUSE	SSFR−FUSE 3A	CP283P00105
210	SW201, 231, 261	SW−SLIDE	ESD−14540	CP431C00801
	SW301	SW−SLIDE	ESD−14540	CP431C00801
211	SW1Y1	SW−SLIDE	ESD−14539	CP431P00501
212	SW1X5, 1X6, 1X7	TACT−SW	SKHRPB	CP439P01101
	SW1X8	TACT−SW	SKHRPB	CP439P01101
213	SW1X1, 1X2, 1X3	TACT−SW	SKHHQW	CP439P01203
	SW1X4, 1Y2	TACT−SW	SKHHQW	CP439P01203
214	SW1X9	TACT−SW	SKHHPP	CP439P01204
215	SW101	VR−CHANNEL	BAND−SW	QX129P00709
216		FRONT PANEL		CP720B00304
217		CONTROL PANEL		CP720B00402
218		TILT & SWIVEL STAND		CP720B00501
219		BACK COVER		CP721B00101
220		ASSY PCB DEFL		CT920B18301

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
221		ASSY PCB VIDEO	CT920B18401
222		ASSY PCB SUB FOCUS	CT920B18501
223		ASSY PCB CONTROL	CT920B20301
224		ASSY PCB POWER	CT920A07401
225		ASSY PCB CRT	CT920D94001
226		ASSY PCB FUNCTION 1	CT920D93402
227		ASSY PCB FUNCTION 2	CT920D93403
228		ASSY PCB FUNCTION 3	CT920D93404
229		ASSY PCB H-CENT 1	CT920D93405
230		ASSY PCB H-CENT 2	CT920D93406
231		ASSY PCB H-OUT 1	CT920D93407
232		ASSY PCB H-OUT 2	CT920D93409
233		ASSY PCB FBT	CT920D93501
234		ASSY PCB COIL	CT920D93503
235		ASSY PCB DRIVE	CT920D93504
236		ASSY CPB TR	CT920D93505
237		ASSY PCB REG 1	CT920D93506
238		ASSY PCB REG 2	CT920D93507
239		ASSY PCB HV-OUT 1	CT920D93508

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL6955KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION	PART No.
240		CUSHION (4pcs)	CP803A04401
241		PACKING CASE	CP802B01402
242		ACCESSORY	CP859C04301
		ACCESSORY (FOR AUSTRALIA)	CP859C04401
243		AC POWER CORD	RX245C50801
244		AC POWER CORD	RX245C50901
245		AC POWER CORD (FOR AUSTRALIA)	CP242C10701
246		FUSE T3.15−250V	QX283D02406

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL7955KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
1		PICTURE TUBE MODEL : HL7955SFKL		AT20G9TZB22 −M−TC211
		PICTURE TUBE MODEL : HL7955SETKL		AT20G9SPB22 −M−TC211
2	Q951	TRANSISTOR	2SC3310	CP260P04302
3	Q388, 389	TRANSISTOR	2SC2705−O	CP260P06803
4	Q387	TRANSISTOR	2SA1145−O	CP260P06804
5	Q953, 954	TRANSISTOR	2SC3332−S	CP260P07302
6	Q514, 515, 516	FET	IRF634	CP260P07801
7	Q201, 231, 261	FET	2SK360−E	CP260P09102
8	Q202, 232, 262	TRANSISTOR	2SC3513	CP260P09201
9	Q907	FET	2SK611	CP260P11801
10	Q303, 401, 402	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q405, 407, 408	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q417, 501, 510	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q520, 522, 523	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q527, 623, 624	TRANSISTOR	KSC1008C−Y, G	CP260P13606
	Q955	TRANSISTOR	KSC1008C−Y, G	CP260P13606
11	Q418	TRANSISTOR	KSA708C−Y	CP260P13706

RECOMMENDED SERVICE PARTS AND PRICE LIST

MODEL NO. : HL7955KL

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ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
12	Q507	TRANSISTOR	2SC3995	CP260P14701
13	Q415	FET	2SK301−Q	CP260P50301
14	Q603	TRANSISTOR	2SC4123	CP260P50601
15	Q952	TRANSISTOR	2SA1408−O	CP261P01302
16	Q905	TRIAC	TM1661S−L	CP261P02102
17	Q701, 702, 703	TRANSISTOR	2SC2603−G	QX260C33805
	Q704, 705, 706	TRANSISTOR	2SC2603−G	QX260C33805
18	Q906	TRANSISTOR	2SC2274−F	QX260C41603
19	Q511, 607	TRANSISTOR	2SC1749C, D / 2SC1749E / 2SC4544	RX260P35202
20	Q384	TRANSISTOR	2SA949−Y	RX270P51002
21	Q406, 409, 416	TRANSISTOR	2SC2229−Y	RX270P51102
	Q521, 707, 708	TRANSISTOR	2SC2229−Y	RX270P51102
22	Q410, 606	TRANSISTOR	2SC2317	RX270P51201
23	Q204, 234, 264	TRANSISTOR	2SC2347	RX270P52301
	Q302	TRANSISTOR	2SC2347	RX270P52301
24	Q301	TRANSISTOR	2SA781−K	RX270P52401
25	Q403, 509, 524	TRANSISTOR	2SD1138−C	RX270P52901
26	Q404, 508	TRANSISTOR	2SB861−C	RX270P53001
27	Q506, 602	FET	2SK358	RX270P54901
28	Q411, 605	TRANSISTOR	2SD921	RX270P55901

MODEL NO. : HL7955KL

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
29	Q608, 620	TRANSISTOR	2SC2603－G	RX270P56308
30	Q512	TRANSISTOR	2SC2570A	RX270P56901
31	Q381, 383	TRANSISTOR	2SC3502－E, F	RX270P57906
32	Q382	TRANSISTOR	2SA1380－E	RX270P58003
33	Q710, 711, 904	TRANSISTOR	2SC3676	RX270P60601
34	IC404, 502	INTEGRATED CIRCUIT	TC4052BP / MC14052BCP	CP263P02003
35	IC503	INTEGRATED CIRCUIT	M5223P	CP263P02201
36	IC403, 504	INTEGRATED CIRCUIT	TD62501P	CP263P02301
37	IC301	INTEGRATED CIRCUIT	M52001	CP263P02701
38	IC109	INTEGRATED CIRCUIT	NJM2904M	CP263P03201
39	IC501	INTEGRATED CIRCUIT	LA7852	CP266P01401
40	IC952	REGULATER	MPC7805HF / L7805ML / M5F7805L	CP266P05001
41	IC953	REGULATER	MPC7824HF / L7824ML / M5F7824L	CP266P05006
42	IC103	INTEGRATED CIRCUIT	PST527A	CP266P08801
43	IC106, 107	INTEGRATED CIRCUIT	74HC14	CP266P09201
44	IC105	INTEGRATED CIRCUIT	74HC123	CP266P09202
45	IC108	INTEGRATED CIRCUIT	74LS08	CP266P09301
46	IC110	INTEGRATED CIRCUIT	MPC324G2	CP266P09401
47	IC102	INTEGRATED CIRCUIT	M6M80041P	CP266P09504

MODEL NO. : HL7955KL

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
48	IC104	INTEGRATED CIRCUIT	M62352P	CP266P09701
49	IC101	INTEGRATED CIRCUIT	HD614089SC67 (WITH CERAMIC RESONATOR)	CP266P07204
50	IC951	REGULATOR	S1−3122V	CP267P00401
51	IC203, 233, 263	INTAGRTED CIRCUIT	VPA−12	CP267P01901
52	IC901	INTAGRTED CIRCUIT	STR−81145A	CP267P02202
53	IC991	INTAGRTED CIRCUIT	STR−S5841	CP267P02301
54	IC405	INTAGRTED CIRCUIT	M5109P	RX266P75201
55	IC302	INTAGRTED CIRCUIT	M74LS32P / SN74LS32N	RX266P87801
56	IC303	INTAGRTED CIRCUIT	HA17805P / MC7805CT	RX277P51902
57	IC201, 231, 261	INTAGRTED CIRCUIT	M51399P	RX277P60301
58	IC401	INTAGRTED CIRCUIT	TDA1670	RX277P61801
59	IC202, 232, 262	INTAGRTED CIRCUIT	TL431CLPB	RX277P65001
60	D506, 507, 602	DIODE	F114F / RGP15J	CP264D00301
	D603	DIODE	F114F / RGP15J	CP264D00301
61	D533	DIODE	F114B / RGP15D	CP264D00302
62	D905, 957, 958	DIODE	EU1Z	CP264P00902
63	D951, 952, 954	DIODE	RU3AM	CP264P01502
	D959	DIODE	RU3AM	CP264P01502

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
64	D710, 908, 944	DIODE	RU−2B	CP264P01602
65	D1X1, 1X6	LED	SLP−335B−55	CP264P05201
66	D711, 712	DIODE	RU4DS	CP264P05301
67	D967	DIODE	R2KN	CP264P05501
68	D537, 538, 612	DIODE	RG2A2	CP264P05801
	D613, 713	DIODE	RG2A2	CP264P05801
69	D953, 955	DIODE	RU−4AM	CP264P06002
70	D406	DIODE	HZ3B2	CP264P07105
71	D516	DIODE	HZ4B2	CP264P07204
72	D956	DIODE	HZ6C1	CP264P07404
73	D407, 606, 620	DIODE	HZ7B2	CP264P07501
74	D701	DIODE	HZ7B2	CP264P07802
75	D534, 535, 536	DIODE	HZ16−1	CP264P08202
76	D624	DIODE	HZ20−1	CP264P08208
77	D608, 609, 610	DIODE	HZ33−2	CP264P08404
78	D201, 231, 261	DIODE	HZK3BTR LLD	CP264P10104
79	D100, 101, 102	DIODE	HZK5BTR	CP264P10201
	D103, 104, 105	DIODE	HZK5BTR	CP264P10201
	D106, 107, 108	DIODE	HZK5BTR	CP264P10201
	D109, 110, 111	DIODE	HZK5BTR	CP264P10201

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
	D112, 113, 114	DIODE	HZK5BTR	CP264P10201
	D115, 116, 117	DIODE	HZK5BTR	CP264P10201
	D120, 121, 123	DIODE	HZK5BTR	CP264P10201
	D124, 125, 127	DIODE	HZK5BTR	CP264P10201
	D128, 134, 135	DIODE	HZK5BTR	CP264P10201
	D136, 137, 138	DIODE	HZK5BTR	CP264P10201
	D139, 301, 303	DIODE	HZK5BTR	CP264P10201
80	D126, 129, 130	DIODE	HZK5CTR LLD	CP264P10202
	D131, 132, 133	DIODE	HZK5CTR LLD	CP264P10202
	D140	DIODE	HZK5CTR LLD	CP264P10202
81	D202, 203, 232	DIODE	HSK120TR LLD	CP264P10501
	D233, 262, 263	DIODE	HSK120TR LLD	CP264P10501
82	D901	DIODE	RBV−608	CP264P12302
83	D914, 915	DIODE	R4KL−J2	CP264P12701
84	D1X2, 1X3, 1X4	DIODE	LN351GPP	CP264P16601
	D1X5	DIODE	LN351GPP	CP264P16601
85	D902	DIODE	PZ−127	CP264P50501
86	D508	DIODE	FMP−G3FS	CP264P52401
87	D909	DIODE	TVR1G / ES−1	QX264D05601
88	D401, 402	DIODE	S5500−D / EM−1Z / ERB12−02RK	QX264D05602

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
89	D381, 384	DIODE	1S2076A / 1S2471	QX264P04508
90	D409, 410, 411	DIODE	1S2076A	QX264P04502
	D413, 415, 416	DIODE	1S2076A	QX264P04502
	D417, 418, 514	DIODE	1S2076A	QX264P04502
	D519, 520, 521	DIODE	1S2076A	QX264P04502
	D522, 524, 525	DIODE	1S2076A	QX264P04502
	D526, 527, 530	DIODE	1S2076A	QX264P04502
	D531, 532, 591	DIODE	1S2076A	QX264P04502
	D622, 623, 625	DIODE	1S2076A	QX264P04502
	D626, 627, 961	DIODE	1S2076A	QX264P04502
91	D382, 943	DIODE	RM−1B	QX264P10105
92	D940, 941	DIODE	RM−1C	QX264P10106
93	D302	DIODE	MZ305B / EQA02−05CDB	QX264P19303
94	D206, 236, 266	DIODE	MZ312B / EQA02−11CDB	QX264P19306
95	D205, 207, 235	DIODE	RC−2	QX264P20901
	D237, 265, 267	DIODE	RC−2	QX264P20901
	D705	DIODE	RC−2	QX264P20901
96	D702	DIODE	1S2076ARG	RX264P04509
97	D304, 509, 510	DIODE	RU2	RX264P19601
	D511, 605, 607	DIODE	RU2	RX264P19601

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98	T502	TRANSFORMER	H-OSC.	CP332D00102
99	T602	TRANSFORMER	FLYBACK	CP334P02301
100	T501, 601	TRANSFORMER	H-DRIVE	CP336P00701
101	T951	TRANSFORMER	CHOPPER	CP350P02001
102	T931	TRANSFORMER	POWER	CP350P03001
103	L953	COIL	CHOKE 2MH 1A	CP321D00201
104	L507, 509	COIL	CHOKE	CP321P01302
105	L956	COIL	CHOKE 22MH 1A	CP321P01501
106	L504	COIL	HORIZONTAL LINEARITY	CP333P00701
107	L508	COIL	LINEARITY	CP333P00801
108	L901, 902	COIL	LINE FILTER	CP351P01803
109		COIL	DEGAUSSING	CP409B01003
110	L601	TRANS-CHOKE		CP409D00102
111	L201, 231, 261	FERRITE		CP410P00201
112		CORE-FERRITE	RISC-6-F	CP410P00303
113	L602	COIL	RF	QX321C01304
114	L954	COIL	FILTER 100MHK	QX409P00602
115	L301, 302, 303	COIL	FILTER 27MHK	QX409P00603
	L951, 952, 955	COIL	FILTER 27MHK	QX409P00603

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
116	L506, 509	COIL	PEAKING 1000MH−K	RX325D02902
117	L205, 206, 235	COIL	INDUCTOR 0.22MH 20%	RX409C52501
	L236, 265, 266	COIL	INDUCTOR 0.22MH 20%	RX409C52501
118	L502	COIL	FILTER 180MH−K	RX409P01706
119	VR201, 231, 261	VARIABLE RESISTOR	SEMIFIXED 1/10W B−200	CP127C00102
120	VR501	VARIABLE RESISTOR	SEMIFIXED 1/10W B−10K	CP127C00109
121	VR301	VARIABLE RESISTOR	SEMIFIXED 1/10W B−50K	CP127C00202
122	VR102	VARIABLE RESISTOR	SEMIFIXED 1/5W B−3K	CP127C02107
123	VR101	VARIABLE RESISTOR	SEMIFIXED 1/5W B−200K	CP127C02204
124	VR701, 702	VARIABLE RESISTOR	SEMIFIXED 1/10W B−3K	CP129C50107
125	VR202, 232, 262	VARIABLE RESISTOR	SEMIFIXED 1/01W B−50K	CP129C50202
126	VR381	VARIABLE RESISTOR	SEMIFIXED 1/5W B100K ± 25%	QX127C03102
127	VR602	VARIABLE RESISTOR	SEMIFIXED 1/2W B−2K	RX129C50706
128	VR601	VARIABLE RESISTOR	SEMIFIXED 1/2W B−5K	RX129C50708
129	R910, 911	RESISTOR	CERAMIC WIRE 5W 0.27−K	CP102P00108
130	R221, 251, 281	RESISTOR	METAL 1/2W 20K−F	CP103C22301
131	R405	RESISTOR	METAL−S 1/4W 3.9K−F	CP103P06603
132	R510, 511	RESISTOR	METAL−S 1/4W 15K−F	CP103P06707

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
133	R4A1	RESISTOR	METAL−S 1/4W 22K−F	CP103P06801
134	R587	RESISTOR	METAL−S 1/4W 24K−F	CP103P06802
135	R924	RESISTOR	METAL−S 1/4W 30K−F	CP103P06804
136	R4A0	RESISTOR	METAL−S 1/4W 33K−F	CP103P06805
137	R403	RESISTOR	METAL−S 1/4W 75K−F	CP103P06904
138	R4C2	RESISTOR	METAL−S 1/4W 150K−F	CP103P07005
139	R186	RESISTOR	CARBON 1/10W 4.7K−F	CP103P11306
140	R183, 185	RESISTOR	CARBON 1/10W 8.2K−F	CP103P11309
141	R182, 184	RESISTOR	CARBON 1/10W 47K−F	CP103P11408
142	R985	RESISTOR	CEMENT WIRE 5W 0.68−K	CP109D00306
143	R912, 913	RESISTOR	CEMENT WIRE 5W 0.27−K	CP109D00307
144	R620	RESISTOR	METAL 1/4W 820−F	QX103P30203
145	R206, 236, 266	RESISTOR	METAL 1/4W 2.7K−F	QX103P30305
	R612	RESISTOR	METAL 1/4W 2.7K−F	QX103P30305
146	R611	RESISTOR	METAL 1/4W 4.7K−F	QX103P30401
147	R624	RESISTOR	METAL 1/4W 5.1K−F	QX103P30402
148	R907	RESISTOR	METAL 1/4W 11K−F	QX103P30500
149	R304, 308	RESISTOR	METAL 1/4W 20K−F	QX103P30506
150	R307, 324	RESISTOR	METAL 1/4W 30K−F	QX103P30600
151	R579	RESISTOR	METAL 1/4W 56K−F	QX103P30607

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
152	R306	RESISTOR	METAL 1/4W 68K−F	QX103P30609
153	R303	RESISTOR	METAL 14W 100K−F	QX103P30703
154	R408, 490	RESISTOR	METAL 1/4W 180K−F	QX103P30709
155	R4A6	RESISTOR	METAL 1/4W 220K−F	QX103P30801
156	R4A7	RESISTOR	METAL 1/4W 330K−F	QX103P30805
157	R625	RESISTOR	METAL 1/4W 430K−F	QX103P30808
158	R409	RESISTOR	METAL 1/4W 470K−F	QX103P30809
159	R903, 946	RESISTOR	FUSE 1/4W 10−J	QX103P37001
160	R385, 386	RESISTOR	FUSE 1/4W 220−J	QX103P37107
161	R3B3	RESISTOR	FUSE 1/4W 2.2−J	QX103P37804
162	R740	RESISTOR	FUSE 1/2W 1.0K−J	QX103P39205
163	R426	RESISTOR	FUSE 1/4W 100−J	QX109P05201
164	R901	RESISTOR	FUSE 1/4W 1.2−J	QX109P05204
165	R328	RESISTOR	METAL 1/4W 3.32K−F	RX103C09501
166	R329	RESISTOR	METAL 1/4W 4.64K−F	RX103C09605
167	R541, 542, 543	RESISTOR	FUSE 1/2W 1.2−K	RX109P01305
	R626, 627	RESISTOR	FUSE 1/2W 1.2−K	RX109P01305
168	C961	CAPACITOR ELECTROLYTIC	50V 470M	CP181P06508
169	C979	CAPACITOR ELECTROLYTIC	250V 2.2M	CP181P11001

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170	C901, 902	CAPACITOR ELECTROLYTIC 250V 680MF	CP185P00702
171	C590	CAPACITOR ELECTROLYTIC 4W 250V 4.7M	QX181P10807
172	C547	CAPACITOR ELECTROLYTIC 4W 250V 100M－M/Q	QX181P19404
173	C543	CAPACITOR ELECTROLYTIC 4W 10V 100M－M	QX181P20104
174	C951, 952	CAPACITOR ELECTROLYTIC 4W 10V 1000M－M	QX181P20108
175	C561	CAPACITOR ELECTROLYTIC 4W 16V 220M－M	QX181P20205
176	C560	CAPACITOR ELECTROLYTIC 4W 16V 470M－M	QX181P20207
177	C544	CAPACITOR ELECTROLYTIC 4W 16V 1000M－M	QX181P20208
178	C564	CAPACITOR ELECTROLYTIC 4W 25V 22M－M	QX181P20301
179	C570	CAPACITOR ELECTROLYTIC 4W 25V 47M－M	QX181P20303
180	C562	CAPACITOR ELECTROLYTIC 4W 25V 100M－M	QX181P20304
181	C516	CAPACITOR ELECTROLYTIC 4W 25V 220M－M	QX181P20305
182	C559	CAPACITOR ELECTROLYTIC 4W 25V 470M－M	QX181P20307
183	C956	CAPACITOR ELECTROLYTIC 4W 25V 1000M－M	QX181P20308
184	C954	CAPACITOR ELECTROLYTIC 4W 25V 2200M－M	QX181P20309
185	C581	CAPACITOR ELECTROLYTIC 4W 35V 220M－M	QX181P20407
186	C962	CAPACITOR ELECTROLYTIC 4W 35V 470M－M	QX181P20409
187	C502, 506, 508	CAPACITOR ELECTROLYTIC 4W 50V 1M－M	QX181P20501
	C532, 533	CAPACITOR ELECTROLYTIC 4W 50V 1M－M	QX181P20501
188	C567, 568	CAPACITOR ELECTROLYTIC 4W 50V 3.3M－M	QX181P20503

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
189	C566	CAPACITOR ELECTROLYTIC	4W 50V 10M−M	QX181P20505
190	C531	CAPACITOR ELECTROLYTIC	4W 50V 22M−M	QX181P20506
191	C515, 591	CAPACITOR ELECTROLYTIC	4W 50V 47M−M	QX181P20508
192	C545	CAPACITOR ELECTROLYTIC	4W 50V 100M−M	QX181P20509
193	C563	CAPACITOR ELECTROLYTIC	4W 50V 220M−M	QX181P20600
194	C965, 966	CAPACITOR ELECTROLYTIC	H180V 220M−Q	QX185D05201
195	C529, 530, 973	CAPACITOR ELECTROLYTIC	100V 100MF	RX189D55904
	C974		100V 100MF	RX189D55904
196	C513	CAPACITOR ELECTROLYTIC	16V 1000MF	RX189D55905
197	AG291, 292, 293	SURGE ABSORBER	DSP−301N	CP252P00101
	AG381, 382	SURGE ABSORBER	DSP−301N	CP252P00101
198	AG383	SURGE ABSORBER	DSA−152MB	RX252C50205
199	TH902	THERMISTOR	NTH18D8R0LB	CP265P00402
200	TH901	THERMISTOR	NTH13D160LB	CP265P00404
201	RP902	POSISTOR	PTH451A12BD180M290	CP265P01303
202	RP901	POSISTOR	PTH451A10BG5R0Q140	CP265P02601
203	Q622	THYRISTOR	TF341M−A	CP269P00301
204	RY902	RELAY−POWER	VS 12MB−VD3	CP287C00101
205	RY501	RELAY	JY 12H−K	CP287P00301

ITEM	SYMBOL No.	DESCRIPTION / SPECIFICATION		PART No.
206	RY901	RELAY	VS 100TBU−VD3	CP287P00701
207	X101	CERAMIC RESONATOR	CSA4.00MG	CP296P00102
208	F401	FUSE	SSFR−FUSE 1A	CP283P00104
209	F951	FUSE	SSFR−FUSE 3A	CP283P00105
210	SW201, 231, 261	SW−SLIDE	ESD−14540	CP431C00801
	SW301	SW−SLIDE	ESD−14540	CP431C00801
211	SW1Y1	SW−SLIDE	ESD−14539	CP431P00501
212	SW1X5, 1X6, 1X7	TACT−SW	SKHRPB	CP439P01101
	SW1X8	TACT−SW	SKHRPB	CP439P01101
213	SW1X1, 1X2, 1X3	TACT−SW	SKHHQW	CP439P01203
	SW1X4, 1Y2	TACT−SW	SKHHQW	CP439P01203
214	SW1X9	TACT−SW	SKHHPP	CP439P01204
215	SW101	VR−CHANNEL	BAND−SW	QX129P00709
216		FRONT PANEL		CP720B00304
217		CONTROL PANEL		CP720B00402
218		TILT & SWIVEL STAND		CP720B00501
219		BACK COVER		CP721B00101
220		ASSY PCB DEFL		CT920B18303

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221		ASSY PCB VIDEO	CT920B18403
222		ASSY PCB SUB FOCUS	CT920B18503
223		ASSY PCB CONTROL	CT920B20303
224		ASSY PCB POWER	CT920A07403
225		ASSY PCB CRT	CT920D94001
226		ASSY PCB FUNCTION 1	CT920D93402
227		ASSY PCB FUNCTION 2	CT920D93403
228		ASSY PCB FUNCTION 3	CT920D93404
229		ASSY PCB H-CENT 1	CT920D93405
230		ASSY PCB H-CENT 2	CT920D93406
231		ASSY PCB H-OUT 1	CT920D93407
232		ASSY PCB H-OUT 2	CT920D93409
233		ASSY PCB FBT	CT920D93501
234		ASSY PCB COIL	CT920D93503
235		ASSY PCB DRIVE	CT920D93504
236		ASSY CPB TR	CT920D93505
237		ASSY PCB REG 1	CT920D93506
238		ASSY PCB REG 2	CT920D93507
239		ASSY PCB HV-OUT 1	CT920D93508

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240		CUSHION (4pcs)	CP803A04401
241		PACKING CASE	CP802B01409
242		ACCESSORY	CP859C04203
243		AC POWER CORD	RX245C50801
244		AC POWER CORD	RX245C50901
245		AC POWER CORD (FOR AUSTRALIA)	CP242C10701
246		FUSE T3.15—250V	QX283D02406